



# ***STIC Search Report***

***EIC 1700***

**STIC Database Tracking Number: 147757**

**TO: Camie Thompson**  
**Location: REM 10D28**  
**Art Unit : 1774 16679**  
**March 22, 2005**

**Case Serial Number: 10/695655**

**From: Usha Shrestha**  
**Location: EIC 1700**  
**REMSEN 4B28**  
**Phone: 571/272-3519**  
**usha.shrestha@uspto.gov**

## **Search Notes**



# STIC Search Results Feedback Form

**EIC17000**

Questions about the scope or the results of the search? Contact *the EIC searcher* or contact:

Kathleen Fuller, EIC 1700 Team Leader  
571/272-2505 REMSEN 4B28

## Voluntary Results Feedback Form

- I am an examiner in Workgroup:  Example: 1713  
➤ Relevant prior art **found**, search results used as follows:

- ☐ 102 rejection
- ☐ 103 rejection
- ☐ Cited as being of interest.
- ☐ Helped examiner better understand the invention.
- ☐ Helped examiner better understand the state of the art in their technology.

Types of relevant prior art found:

- ☐ Foreign Patent(s)
- ☐ Non-Patent Literature  
(journal articles, conference proceedings, new product announcements etc.)

➤ Relevant prior art **not found**:

- ☐ Results verified the lack of relevant prior art (helped determine patentability).
- ☐ Results were not useful in determining patentability or understanding the invention.

Comments:

Drop off or send completed forms to EIC1700 REMSEN 4B28



## SEARCH REQUEST FORM

Scientific and Technical Information Center

Requester's Full Name: Came Thompson Examiner #: 79244 Date: 3/13/05  
 Art Unit: 1774 Phone Number 30 971221530 Serial Number: 10695655  
 Mail Box and Bldg/Room Location: 10D28 Results Format Preferred (circle): PAPER DISK E-MAIL  
Revised

If more than one search is submitted, please prioritize searches in order of need.

\*\*\*\*\*  
 Please provide a detailed statement of the search topic, and describe as specifically as possible the subject matter to be searched. Include the elected species or structures, keywords, synonyms, acronyms, and registry numbers, and combine with the concept or utility of the invention. Define any terms that may have a special meaning. Give examples or relevant citations, authors, etc. if known. Please attach a copy of the cover sheet, pertinent claims, and abstract.

Title of Invention: Organic electroluminescent device  
 Inventors (please provide full names): Hsien-Chang Lin; Chih-Hao Kung; Chung-Ching Pa  
Izu-Chia Tseng  
 Earliest Priority Filing Date: 10/25/2002

\*For Sequence Searches Only\* Please include all pertinent information (parent, child, divisional, or issued patent numbers) along with the appropriate serial number.

Please do a search on claims 1-19

Thanks

## STAFF USE ONLY

Searcher: Wdka  
 Searcher Phone #: \_\_\_\_\_  
 Searcher Location: \_\_\_\_\_  
 Date Searcher Picked Up: 3/22/05  
 Date Completed: 3/23/05  
 Searcher Prep & Review Time: 60  
 Clerical Prep Time: 30  
 Online Time: 70

## Type of Search

NA Sequence (#) \_\_\_\_\_  
 AA Sequence (#) \_\_\_\_\_  
 Structure (#) 2  
 Bibliographic \_\_\_\_\_  
 Litigation \_\_\_\_\_  
 Fulltext \_\_\_\_\_  
 Patent Family \_\_\_\_\_  
 Other \_\_\_\_\_

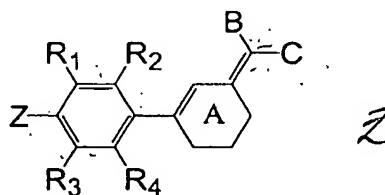
## Vendors and cost where applicable

STN 8557.81  
 Dialog \_\_\_\_\_  
 Questel/Orbit \_\_\_\_\_  
 Dr. Link \_\_\_\_\_  
 Lexis/Nexis \_\_\_\_\_  
 Sequence Systems \_\_\_\_\_  
 WWW/Internet \_\_\_\_\_  
 Other (specify) \_\_\_\_\_

What is claimed is:

1. An organic electroluminescent device, comprising:  
a transparent substrate;  
an anode, disposed on the transparent substrate;  
5 an organic electroluminescent layer, disposed on the anode; and  
a cathode, disposed on the organic electroluminescent layer, wherein the organic  
electroluminescent layer comprises a compound represented by a following chemical  
structure (1):

(1)



10

- wherein R<sub>1</sub>~R<sub>4</sub> are hydrogen, substituted or unsubstituted alkyl group,  
substituted or unsubstituted cycloalkyl group, substituted or unsubstituted alkyloxy  
group, substituted or unsubstituted alkenyl group, substituted or unsubstituted amino  
15 group, substituted or unsubstituted polycyclic aromatic group or a combination thereof;  
Z is a electron-donating group; A is substituted or unsubstituted cyclohexene or  
naphthalene group; and B and C are electron withdrawing groups.

2. The organic electroluminescent device of claim 1, wherein B and C can be  
same or different substitutes.

3. The organic electroluminescent device of claim 1, wherein B and C are comprised of cyano, indandione, benzoimidazole, benzooxazole or benzothiazole substitutes.

4. The organic electroluminescent device of claim 1, wherein the organic  
5 electroluminescent layer further comprises an aromatic amino compound, an aromatic diamino compound or an aromatic triamine compound having poly-cyclic ring aromatic substitutes or aromatic hydroxyl substitutes.

5. The organic electroluminescent device of claim 1, wherein the organic electroluminescent layer further comprises a metal complex.

10 6. The organic electroluminescent device of claim 5, wherein the metal complex comprises AlQ3.

7. The organic electroluminescent device of claim 1, wherein the organic electroluminescent layer has a thickness from about 1 nm to about 1  $\mu$ m.

8. The organic electroluminescent device of claim 1, wherein the Z is -NR<sub>5</sub>R<sub>6</sub>.

15 9. The organic electroluminescent device of claim 1, further comprising an electron transporting layer disposed between the cathode and the organic electroluminescent layer.

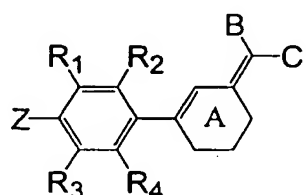
10. The organic electroluminescent device of claim 9, further comprising an electron injection layer is disposed between the cathode and the electron transporting  
20 layer.

✓ 11. The organic electroluminescent device of claim 1, further comprising a hole transporting layer disposed between the anode and the organic electroluminescent layer.

✓ 12. The organic electroluminescent device of claim 11, further comprising a hole injection layer is disposed between the anode and the hole transporting layer.

13. An organic electroluminescent compound utilized for an organic electroluminescent device, the organic electroluminescent compound is represented by the following chemical structure (1):

5 (1)



wherein R<sub>1</sub>~R<sub>4</sub> are hydrogen, substituted or unsubstituted alkyl group, substituted or unsubstituted cycloalkyl group, substituted or unsubstituted alkyloxy group, substituted or unsubstituted alkenyl group, substituted or unsubstituted amino group, substituted or unsubstituted polycyclic aromatic group or a combination thereof; Z is a electron-donating group; A is substituted or unsubstituted cyclohexene or naphthalene group; and B and C are electron withdrawing groups.

14. The organic electroluminescent compound of claim 13, wherein B and C can be same or different substitutes.

15. The organic electroluminescent compound of claim 13, wherein B and C are comprised of cyano, indandione, benzoimidazole, benzoxazole or benzothiazole substitutes.

16. The organic electroluminescent compound of claim 13, wherein the organic electroluminescent compound further comprises an aromatic amino compound, an

aromatic diamino compound or an aromatic triamine compound having poly-cyclic ring aromatic substitutes or aromatic hydroxyl substitutes.

17. The organic electroluminescent compound of claim 13, wherein the organic electroluminescent compound further comprises a metal complex.

5        18. The organic electroluminescent compound of claim 17, wherein the metal complex comprises AlQ3.

19. The organic electroluminescent compound of claim 13, wherein the Z is - NR5R6.

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STR

L2 FILE 'REGISTRY' ENTERED AT 16:26:25 ON 22 MAR 2005  
0 S L1  
L3 8 S L1 FUL  
SAV L3 THM655/A

L4 FILE 'HCAPLUS' ENTERED AT 16:36:17 ON 22 MAR 2005  
8 S L3  
L5 1 S US20040131885/PN  
L6 0 S L4 AND L5

L7 FILE 'REGISTRY' ENTERED AT 16:54:50 ON 22 MAR 2005  
STR L1  
L8 0 S L7  
L9 SCR 1035  
L10 1 S L7 AND L9  
L11 39 S L7 AND L9 FUL

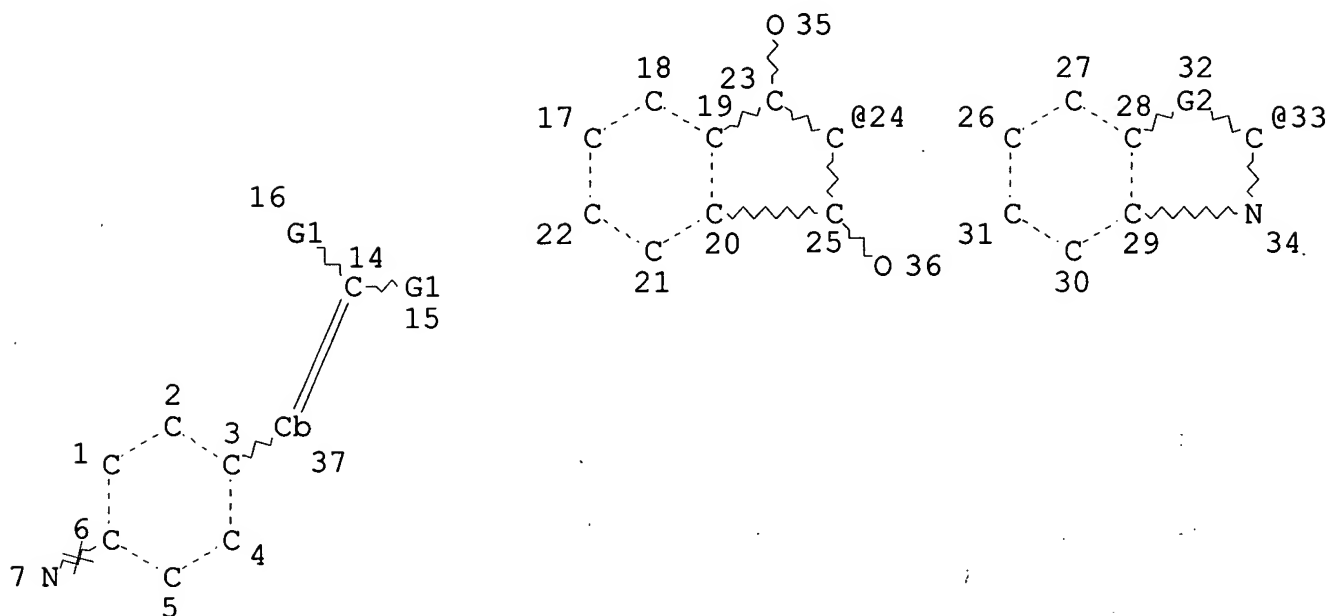
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30 S L11  
L13 31 S L4 OR L12

FILE 'REGISTRY' ENTERED AT 17:13:38 ON 22 MAR 2005

=> d que l12

L7 STR





VAR G1=CN/24/33

VAR G2=N/O/S

NODE ATTRIBUTES:

NSPEC IS RC AT 7

DEFAULT MLEVEL IS ATOM

GGCAT IS UNS AT 37

DEFAULT ECLEVEL IS LIMITED

GRAPH ATTRIBUTES:

RING(S) ARE ISOLATED OR EMBEDDED

NUMBER OF NODES IS 31

STEREO ATTRIBUTES: NONE

L9 SCR 1035

L11 39 SEA FILE=REGISTRY SSS FUL L7 AND L9

L12 30 SEA FILE=HCAPLUS ABB=ON PLU=ON L11

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=> d 113 1-31 ibib abs hitstr hitind

L13 ANSWER 1 OF 31 HCAPLUS COPYRIGHT 2005 ACS on STN

ACCESSION NUMBER: 2005:6761 HCAPLUS

TITLE: Bistriarylamine polymer-based composites for photorefractive applications

AUTHOR(S): Thomas, Jayan; Fuentes-Hernandez, Canek; Yamamoto, Michiharu; Cammack, Kevin; Matsumoto, Kenji; Walker, Gregory A.; Barlow, Stephen; Kippelen, Bernard; Meredith, Gerald; Marder, Seth R.; Peyghambarian, Nasser  
CORPORATE SOURCE: Optical Sciences Center, University of Arizona, Tucson, AZ, 85721, USA

SOURCE: Advanced Materials (Weinheim, Germany) (2004), 16(22), 2032-2036

CODEN: ADVMEW; ISSN: 0935-9648

PUBLISHER: Wiley-VCH Verlag GmbH & Co. KGaA

DOCUMENT TYPE: Journal

LANGUAGE: English

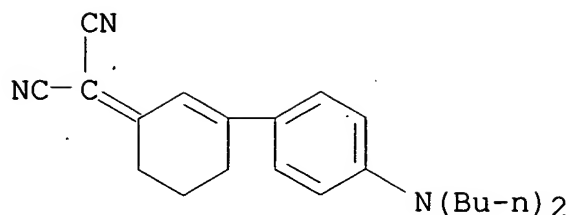
AB The development and performance of tetraphenyldiaminobiphenyl-based (TPD) polymer composites with stable video-rate-compatible response times over large exposures is reported. The polymer has a polyacrylate backbone and the well known hole transporting tetraphenyldiaminobiphenyl pendant group attached through an alkoxy linker. The alkoxy spacer is designed to reduce the glass transition temperature and accomplish structural flexibility and orientational freedom of the TPD units in the polymer. The high diffraction efficiency together with an exposure-history independence of the response time described is a significant advance for developing an all-organic photorefractive composite for device applications.

IT **548792-52-5**

(chromophore; bistriarylamine polymer-based composites for photorefractive applications)

RN 548792-52-5 HCAPLUS

CN Propanedinitrile, [3-[4-(dibutylamino)phenyl]-2-cyclohexen-1-ylidene]- (9CI) (CA INDEX NAME)



CC 38-3 (Plastics Fabrication and Uses)

Section cross-reference(s): 73

IT 199297-13-7, 7-DCST **548792-52-5**

(chromophore; bistriarylamine polymer-based composites for photorefractive applications)

REFERENCE COUNT: 26 THERE ARE 26 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L13 ANSWER 2 OF 31 HCAPLUS COPYRIGHT 2005 ACS on STN

ACCESSION NUMBER: 2004:766768 HCAPLUS

DOCUMENT NUMBER: 141:429577

TITLE: Video-rate compatible photorefractive polymers with stable dynamic properties under continuous operation

AUTHOR(S): Fuentes-Hernandez, Canek; Thomas, Jayan; Termine, Roberto; Meredith, Gerald; Peyghambarian, Nasser; Kippelen, Bernard; Barlow, Steve; Walker, Gregory; Marder, Seth R.; Yamamoto, Michiharu; Cammack, Kevin; Matsumoto, Kenji

CORPORATE SOURCE: Optical Sciences Center, University of Arizona, Tucson, AZ, 85721, USA

SOURCE: Applied Physics Letters (2004), 85(11), 1877-1879

CODEN: APPLAB; ISSN: 0003-6951

PUBLISHER: American Institute of Physics

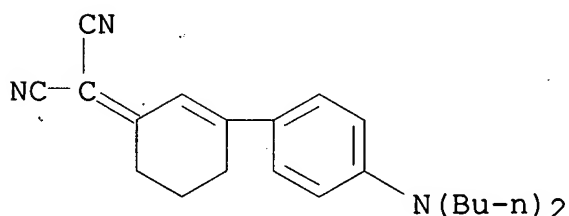
DOCUMENT TYPE: Journal

LANGUAGE: English

AB The authors report on photorefractive polymer composites that exhibit stable dynamic properties under continuous operation. These materials are based on a bis-triarylamine side-chain polymer matrix with a low ionization potential. The evolution of the response time for exposures up to 4 kJ/cm<sup>2</sup> was studied and compared with that obtained in poly(N-vinylcarbazole) (PVK) based composites. In the composites, operational stability is combined

with video-rate compatible dynamics, large dynamic range at moderate fields, and long shelf lifetimes.

IT **548792-52-5**, 3-(N,N-Di-butylaniline-4-yl)-1-dicyanomethylidene-2-cyclohexene  
(video-rate compatible photorefractive polymer composite based on polyacrylate containing triarylamine derivative side groups)  
RN 548792-52-5 HCAPLUS  
CN Propanedinitrile, [3-[4-(dibutylamino)phenyl]-2-cyclohexen-1-ylidene]- (9CI) (CA INDEX NAME)



CC 74-8 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)  
Section cross-reference(s): 73  
IT 86-28-2, N-Ethylcarbazole 199297-13-7, 7-DCST  
**548792-52-5**, 3-(N,N-Di-butylaniline-4-yl)-1-dicyanomethylidene-2-cyclohexene  
(video-rate compatible photorefractive polymer composite based on polyacrylate containing triarylamine derivative side groups)  
REFERENCE COUNT: 11 THERE ARE 11 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L13 ANSWER 3 OF 31 HCAPLUS COPYRIGHT 2005 ACS on STN  
ACCESSION NUMBER: 2004:593772 HCAPLUS  
DOCUMENT NUMBER: 141:285704  
TITLE: High-performance photorefractive polymers sensitized by cadmium selenide nanoparticles  
AUTHOR(S): Fuentes-Hernandez, Canek; Suh, Duck Jong; Kippelen, Bernard; Marder, Seth R.  
CORPORATE SOURCE: Optical Sciences Center, University of Arizona, Tucson, AZ, 85721, USA  
SOURCE: Applied Physics Letters (2004), 85(4), 534-536  
CODEN: APPLAB; ISSN: 0003-6951  
PUBLISHER: American Institute of Physics  
DOCUMENT TYPE: Journal  
LANGUAGE: English

USHA SHRESTHA REM 4B28

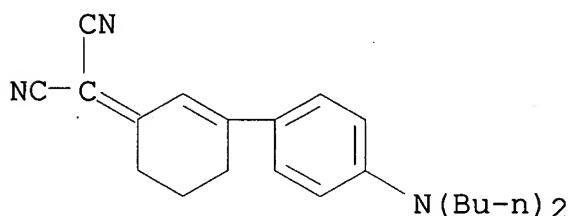
AB The authors report on efficient and fast hybrid photorefractive polymer sensitized with cadmium selenide (CdSe) quantum dots. The surface of the quantum dots was treated with 4-methylbenzenethiol. This surfactant is responsible for efficient photoinduced charge generation in the composite, leading to fast grating build-up times of 100 ms and below. Overmodulation of the diffraction efficiency was observed at an applied field of 60 V/ $\mu$ m.

IT **548792-52-5**

(composite; hybrid photorefractive polymer sensitized with cadmium selenide quantum dots using methylbenzenethiol as surfactant for photoinduced charge generation)

RN 548792-52-5 HCAPLUS

CN Propanedinitrile, [3-[4-(dibutylamino)phenyl]-2-cyclohexen-1-ylidene]- (9CI) (CA INDEX NAME)



CC 74-8 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)

Section cross-reference(s): 73

IT 106-45-6, 4-Methylbenzenethiol 25067-59-8, Poly(vinylcarbazole)

199297-13-7, 7-DCST **548792-52-5**

(composite; hybrid photorefractive polymer sensitized with cadmium selenide quantum dots using methylbenzenethiol as surfactant for photoinduced charge generation)

REFERENCE COUNT: 16 THERE ARE 16 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L13 ANSWER 4 OF 31 HCAPLUS COPYRIGHT 2005 ACS on STN

ACCESSION NUMBER: 2004:550601 HCAPLUS

DOCUMENT NUMBER: 141:113843

TITLE: Organic electroluminescent devices and organic electroluminescent compounds for use in the electroluminescent devices

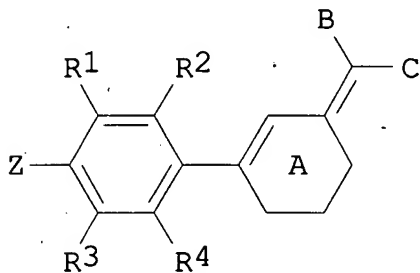
INVENTOR(S): Lin, Hsien-Chang; Kung, Chih-Hao; Pai, Chung-Cheng; Shieh, Shwu-Ju; Tang, Tzu-Chin

PATENT ASSIGNEE(S): Taiwan

SOURCE: U.S. Pat. Appl. Publ., 16 pp.  
 CODEN: USXXCO  
 DOCUMENT TYPE: Patent  
 LANGUAGE: English  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO. -----	KIND ----	DATE -----	APPLICATION NO. -----	DATE
US 2004131885	A1	20040708	US 2003-695655	2003 1027
PRIORITY APPLN. INFO.:			TW 2002-91125124	A 2002 1025

OTHER SOURCE(S): MARPAT 141:113843  
 GI



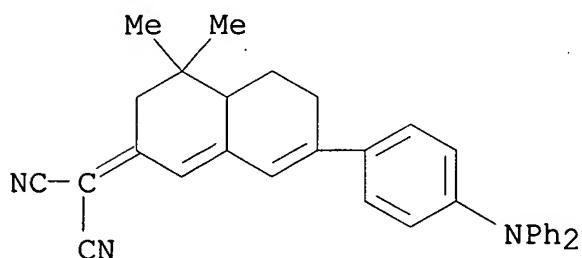
AB Organic electroluminescent compds. and organic electroluminescent devices employing the compds. are disclosed in which the organic electroluminescent compound is represented by the general formula (I) in which R1-4 are hydrogen, substituted or unsubstituted alkyl group, substituted or unsubstituted cycloalkyl group, substituted or unsubstituted alkyloxy group, substituted or unsubstituted alkenyl group, substituted or unsubstituted amino group, substituted or unsubstituted polycyclic aromatic group or their combination; Z is a electron-donating group; A is substituted or unsubstituted cyclohexene or naphthalene group; and B and C are electron withdrawing groups.

IT **717927-78-1P 717927-80-5P**

(organic electroluminescent devices and organic electroluminescent compds. for use in electroluminescent devices)

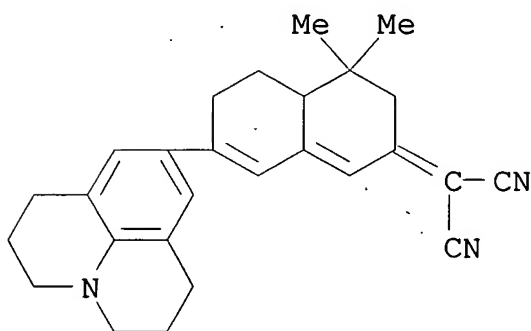
RN 717927-78-1 HCAPLUS

CN Propanedinitrile, [7-[4-(diphenylamino)phenyl]-4,4a,5,6-tetrahydro-4,4-dimethyl-2(3H)-naphthalenylidene]- (9CI) (CA INDEX NAME)



RN 717927-80-5 HCAPLUS

CN Propanedinitrile, [4,4a,5,6-tetrahydro-4,4-dimethyl-7-(2,3,6,7-tetrahydro-1H,5H-benzo[ij]quinolizin-9-yl)-2(3H)-naphthalenylidene]- (9CI) (CA INDEX NAME)



IC ICM H05B033-14

ICS C09K011-06

NCL 428690000; 428917000; 313504000; 313506000; 252301160

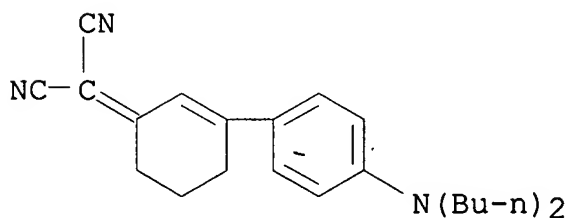
CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)

Section cross-reference(s): 22, 76

IT **717927-78-1P 717927-80-5P**

(organic electroluminescent devices and organic electroluminescent compds. for use in electroluminescent devices)

L13 ANSWER 5 OF 31 HCAPLUS COPYRIGHT 2005 ACS on STN  
ACCESSION NUMBER: 2003:986589 HCAPLUS  
DOCUMENT NUMBER: 141:267439  
TITLE: Efficient photorefractive polymers sensitized  
by CdSe nanoparticles  
AUTHOR(S): Fuentes-Hernandez, Canek; Suh, Duck J.;  
Marder, Seth R.; Kippelen, Bernard  
CORPORATE SOURCE: Optical Sciences Ctr, Univ. of Arizona,  
Tucson, AZ, 85721, USA  
SOURCE: Proceedings of SPIE-The International Society  
for Optical Engineering (2003), 5216(Organic  
Holographic Materials and Applications),  
221-228  
CODEN: PSISDG; ISSN: 0277-786X  
PUBLISHER: SPIE-The International Society for Optical  
Engineering  
DOCUMENT TYPE: Journal  
LANGUAGE: English  
AB We report on an efficient and fast hybrid photorefractive polymer  
sensitized with CdSe quantum dots. The surface of the quantum  
dots was treated with 4-methylbenzenethiol. This surfactant  
allows the quantum dots to have an efficient photoinduced charge  
generation when mixed with a mixture of chromophores. The enhanced  
photoconductive properties lead to fast grating build-up times of  
100 ms and below. In four-wave mixing expts., overmodulation of  
the diffraction efficiency was observed at an applied field of 60  
V/ $\mu$ m and gain coeffs. on the order of 20 cm<sup>-1</sup> at moderate  
fields.  
IT **548792-52-5**  
(DBDC; efficient photorefractive polymers sensitized by CdSe  
nanoparticles)  
RN 548792-52-5 HCAPLUS  
CN Propanedinitrile, [3-[4-(dibutylamino)phenyl]-2-cyclohexen-1-  
ylidene]- (9CI) (CA INDEX NAME)





CC 73-2 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)

Section cross-reference(s): 36

IT 548792-52-5

(DBDC; efficient photorefractive polymers sensitized by CdSe nanoparticles)

REFERENCE COUNT: 19 THERE ARE 19 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L13 ANSWER 6 OF 31 HCAPLUS COPYRIGHT 2005 ACS on STN

ACCESSION NUMBER: 2003:986578 HCAPLUS

DOCUMENT NUMBER: 141:284663

TITLE: Photorefractive polymers based on bis-triarylamine side-chain polymers

AUTHOR(S): Fuentes-Hernandez, Canek; Thomas, Jayan; Termine, Roberto; Eralp, Muhsin; Yamamoto, Michiharu; Cammack, Kevin; Matsumoto, Kenji; Barlow, Stephen; Walker, Gregory; Meredith, Gerald; Peyghambarian, Nasser; Kippelen, Bernard; Marder, Seth R.

CORPORATE SOURCE: Optical Sciences Center, University of Arizona, Tucson, AZ, 85721, USA

SOURCE: Proceedings of SPIE-The International Society for Optical Engineering (2003), 5216(Organic Holographic Materials and Applications), 83-90  
CODEN: PSISDG; ISSN: 0277-786X

PUBLISHER: SPIE-The International Society for Optical Engineering

DOCUMENT TYPE: Journal

LANGUAGE: English

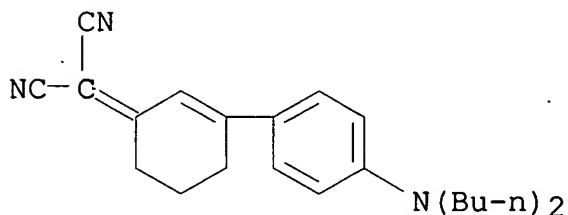
AB We report on the photorefractive properties of two polymer composites that utilize a new bis-triarylamine side-chain polymer matrix. Correctly locating the frontier orbitals of the new transport manifold with respect to the HOMO levels of chromophores, allows stable continuous operation over exposure levels of more than 4 kJ/cm<sup>2</sup> when samples are elec. biased at 57 V/ $\mu$ m. This operational stability is combined with video-rate compatible grating build-up times and a dynamic range that allows index modulations of  $3 \times 10^{-3}$  and gain coeffs. on the order of 100 cm<sup>-1</sup> at moderate fields. The thermal stability of one of the composites reported is excellent, showing no signs of phase separation even after one week at 60°C. A comparison with the stability of composites where the new matrix was replaced by PVK is also presented.

IT 548792-52-5

(DBDC; photorefractive polymers based on bis-triarylamine side-chain polymers)

RN 548792-52-5 HCAPLUS

CN Propanedinitrile, [3-[4-(dibutylamino)phenyl]-2-cyclohexen-1-ylidene]- (9CI) (CA INDEX NAME)



CC 73-2 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)

Section cross-reference(s): 36

IT 548792-52-5

(DBDC; photorefractive polymers based on bis-triarylamine side-chain polymers)

REFERENCE COUNT: 15 THERE ARE 15 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L13 ANSWER 7 OF 31 HCAPLUS COPYRIGHT 2005 ACS on STN

ACCESSION NUMBER: 2003:818509 HCAPLUS

DOCUMENT NUMBER: 139:308323

TITLE: Polymers and their production for photorefractive compositions

INVENTOR(S): Yamamoto, Michiharu; Marder, Seth R.; Kippelen, Bernard

PATENT ASSIGNEE(S): Nitto Denko Corporation, Japan; Arizona Board of Regents On Behalf of the University of Arizona

SOURCE: PCT Int. Appl., 179 pp.  
CODEN: PIXXD2

DOCUMENT TYPE: Patent

LANGUAGE: English

FAMILY ACC. NUM. COUNT: 2

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
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USHA SHRESTHA REM 4B28

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WO 2003085065

A2

20031016

WO 2003-US8541

2003  
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2002  
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2002  
0329

PRIORITY APPLN. INFO.:

US 2002-113127

A

2002  
0329

US 2002-113330

A

2002  
0329

OTHER SOURCE(S): MARPAT 139:308323

AB A photorefractive composition comprising a polymer is prepared by living

radical polymerization, wherein: the living radical polymerization is carried

out using a monomer, a polymerization initiator, transition metal catalyst and a ligand capable of reversibly forming a complex with the transition metal catalyst, and the polymer comprises at least one of a repeat unit including a moiety having charge transport ability and a repeat unit including a moiety having non-linear-optical ability. A composition contained 5-[N-ethyl-N-4-formylphenyl]amino-pentyl acrylate homopolymer, 4-homopiperidinobenzylidene malononitrile, and an ethylcarbazole plasticizer.

IT 548792-52-5P 612526-54-2P

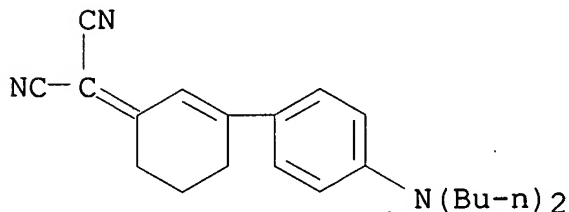
USHA SHRESTHA

REM 4B28

(chromophore; polymers and their production for photorefractive compns.)

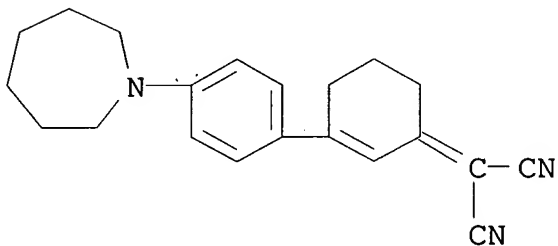
RN 548792-52-5 HCAPLUS

CN Propanedinitrile, [3-[4-(dibutylamino)phenyl]-2-cyclohexen-1-ylidene]- (9CI) (CA INDEX NAME)



RN 612526-54-2 HCAPLUS

CN Propanedinitrile, [3-[4-(hexahydro-1H-azepin-1-yl)phenyl]-2-cyclohexen-1-ylidene]- (9CI) (CA INDEX NAME)



IC ICM C09K009-00

CC 37-3 (Plastics Manufacture and Processing)  
Section cross-reference(s): 73

IT 199297-13-7P **548792-52-5P 612526-54-2P**

(chromophore; polymers and their production for photorefractive compns.)

L13 ANSWER 8 OF 31 HCAPLUS COPYRIGHT 2005 ACS on STN

ACCESSION NUMBER: 2003:707777 HCAPLUS

DOCUMENT NUMBER: 139:237438

TITLE: Sterically stabilized second-order nonlinear optical chromophores with improved stability and devices incorporating the same

INVENTOR(S): Zhang, Cheng; Fetterman, Harold R.; Steier, William; Michael, Joseph

PATENT ASSIGNEE(S): Pacific Wave Industries, Inc., USA

SOURCE: U.S., 29 pp., Cont.-in-part of U.S. 6,361,717.  
 CODEN: USXXAM  
 DOCUMENT TYPE: Patent  
 LANGUAGE: English  
 FAMILY ACC. NUM. COUNT: 10  
 PATENT INFORMATION:

PATENT NO. -----	KIND ----	DATE -----	APPLICATION NO. -----	DATE
US 6616865	B1	20030909	US 2000-546930	2000 0411
US 6067186	A	20000523	US 1998-122806	1998 0727
US 6361717	B1	20020326	US 2000-488422	2000 0120
US 6348992	B1	20020219	US 2000-551685	2000 0418
US 6652779	B1	20031125	US 2000-679937	2000 1005
WO 2001077749	A1	20011018	WO 2001-US11613	2001 0409

W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA,  
 CH, CN, CR, CU, CZ, DE, DK, DM, DZ, EE, ES, FI, GB, GD,  
 GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR,  
 KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW,  
 MX, MZ, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL,  
 TJ, TM, TR, TT, TZ, UA, UG, UZ, VN, YU, ZA, ZW, AM, AZ,  
 BY, KG, KZ, MD, RU, TJ, TM  
 RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW, AT, BE,  
 CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL,  
 PT, SE, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR,  
 NE, SN, TD, TG

US 2002027220	A1	20020307	US 2001-898625	2001 0703
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US 6555027	B2	20030429	US 1998-122806	A2 1998
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PRIORITY APPLN. INFO.:

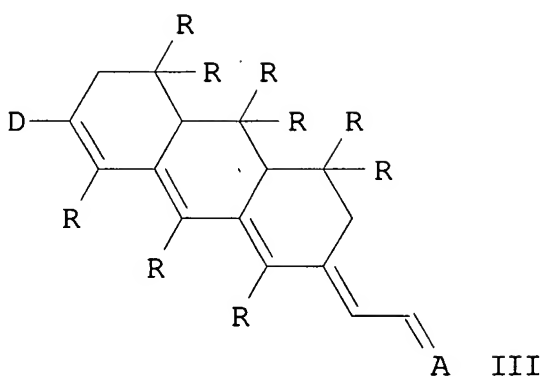
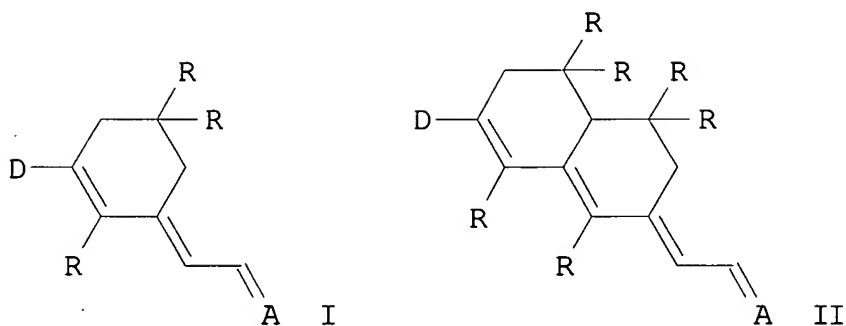
0727

US 2000-488422 A2  
2000  
0120

US 2000-546930 A2  
2000  
0411

US 2000-551685 A2  
2000  
0418

OTHER SOURCE(S): MARPAT 139:237438  
GI



AB A nonlinear optical device is described comprising an active element including a sterically stabilized 2nd-order chromophore

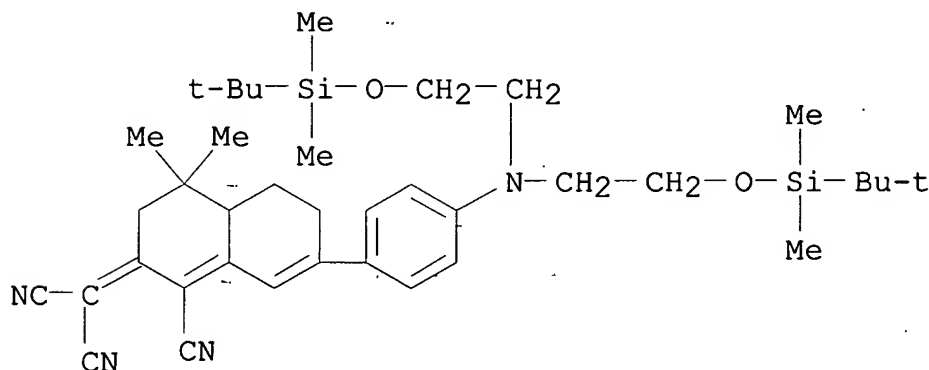
units according to I,II and III wherein D is an electron donor group; wherein A is an electron acceptor group; wherein R = H, F, or any perhalogenated, halogenated or non-halogenated aliphatic or aromatic group with 1-30 carbon atoms functionalized with zero or more of the following functional groups: hydroxy, ether, ester, amino, silyl, and siloxy, and R groups at different positions are not necessarily the same.

IT **367272-45-5P**

(chromophore; sterically stabilized second-order nonlinear optical chromophores with improved stability and devices incorporating them)

RN 367272-45-5 HCAPLUS

CN Propanedinitrile, [7-[4-[bis[2-[(1,1-dimethylethyl)dimethylsilyl]oxy]ethyl]amino]phenyl]-1-cyano-4,4a,5,6-tetrahydro-4,4-dimethyl-2(3H)-naphthalenyldiene]- (9CI) (CA INDEX NAME)



IC ICM F21V009-00

ICS G02F001-35

NCL 252582000; 359328000

CC 73-10 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)

Section cross-reference(s): 22

IT 367272-38-6P 367272-40-0P 367272-41-1P **367272-45-5P**  
595567-93-4P

(chromophore; sterically stabilized second-order nonlinear optical chromophores with improved stability and devices incorporating them)

REFERENCE COUNT:

81

THERE ARE 81 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L13 ANSWER 9 OF 31 HCAPLUS COPYRIGHT 2005 ACS on STN

ACCESSION NUMBER: 2003:216397 HCAPLUS

DOCUMENT NUMBER: 139:69793

TITLE: Synthesis and stability studies of conformationally locked 4-(diarylamino)aryl- and 4-(dialkylamino)phenyl-substituted second-order nonlinear optical polyene chromophores

AUTHOR(S): Staub, Katrin; Levina, Galina A.; Barlow, Stephen; Kowalczyk, Tony C.; Lackritz, Hilary S.; Barzoukas, Marguerite; Fort, Alain; Marder, Seth R.

CORPORATE SOURCE: Beckman Institute, California Institute of Technology, Pasadena, 91125, USA

SOURCE: Journal of Materials Chemistry (2003), 13(4), 825-833

CODEN: JMACEP; ISSN: 0959-9428

PUBLISHER: Royal Society of Chemistry

DOCUMENT TYPE: Journal

LANGUAGE: English

AB A series of chromophores with high second-order nonlinearities has been synthesized; the chromophores consist of triarylamine or dialkylarylamine donors linked by a conformationally locked polyene bridge to a dicyanomethylidene acceptor. The use of bridges of this type, combined with the replacement of dialkylarylamine with triarylamine donors, leads to high thermal stability without adverse affects on the nonlinear optical properties of the chromophores.

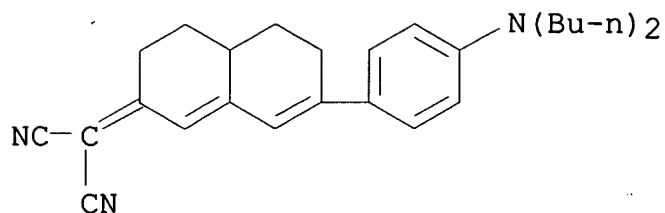
IT **439248-57-4P 548792-52-5P 548792-53-6P 548792-58-1P**

(chromophore; synthesis and stability studies of conformationally locked 4-(diarylamino)aryl- and 4-(dialkylamino)phenyl-substituted second-order nonlinear optical polyene chromophores)

RN 439248-57-4 HCAPLUS

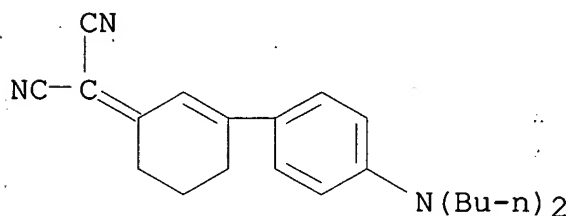
CN Propanedinitrile, [7-[4-(dibutylamino)phenyl]-4,4a,5,6-tetrahydro-2(3H)-naphthalenyldiene]- (9CI) (CA INDEX NAME)





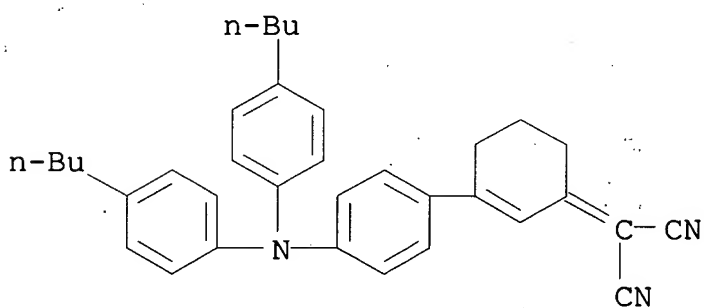
RN 548792-52-5 HCAPLUS

CN Propanedinitrile, [3-[4-(dibutylamino)phenyl]-2-cyclohexen-1-ylidene]- (9CI) (CA INDEX NAME)



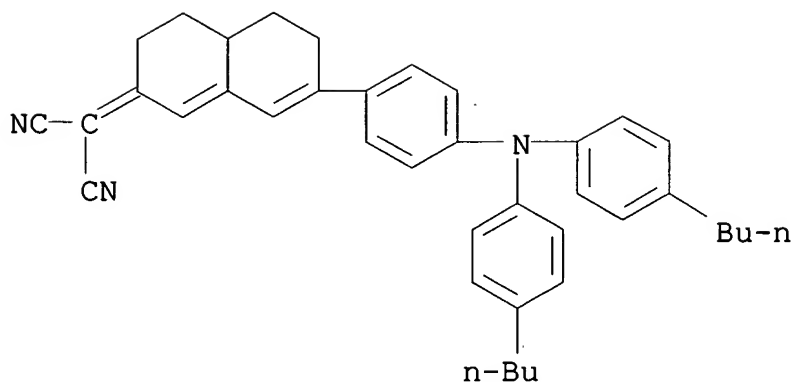
RN 548792-53-6 HCAPLUS

CN Propanedinitrile, [3-[4-[bis(4-butylphenyl)amino]phenyl]-2-cyclohexen-1-ylidene]- (9CI) (CA INDEX NAME)



RN 548792-58-1 HCAPLUS

CN Propanedinitrile, [7-[4-[bis(4-butylphenyl)amino]phenyl]-4,4a,5,6-tetrahydro-2(3H)-naphthalenylylidene]- (9CI) (CA INDEX NAME)

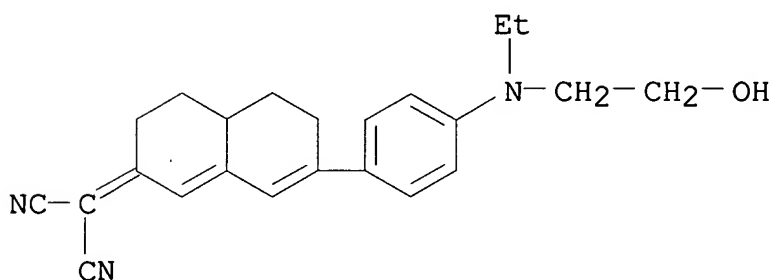


IT 402961-94-8P 548792-54-7P 548792-55-8P  
 548792-56-9P 548792-57-0P 548792-59-2P  
 548792-60-5P

(chromophore; synthesis and stability studies of  
 conformationally locked 4-(diarylamino)aryl- and  
 4-(dialkylamino)phenyl-substituted second-order nonlinear  
 optical polyene chromophores)

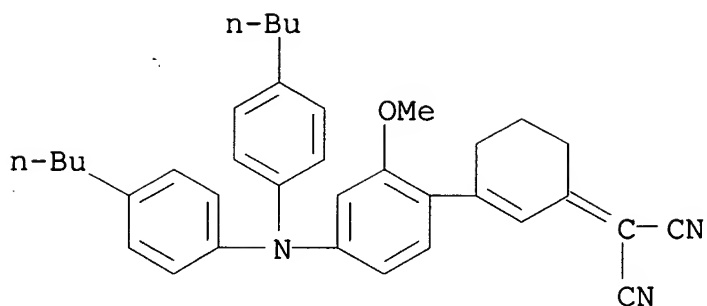
RN 402961-94-8 HCAPLUS

CN Propanedinitrile, [7-[4-[ethyl(2-hydroxyethyl)amino]phenyl]-  
 4,4a,5,6-tetrahydro-2(3H)-naphthalenyldiene]- (9CI) (CA INDEX  
 NAME)



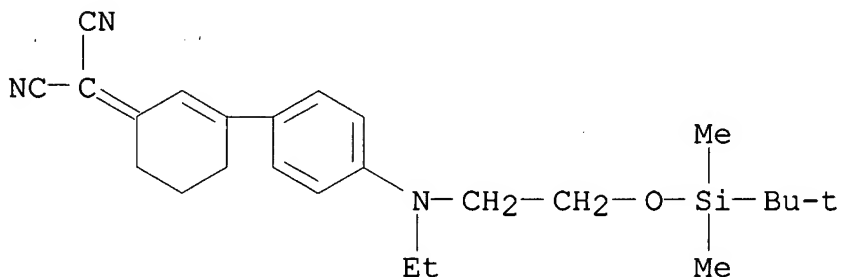
RN 548792-54-7 HCAPLUS

CN Propanedinitrile, [3-[4-[bis(4-butylphenyl)amino]-2-methoxyphenyl]-  
 2-cyclohexen-1-ylidene]- (9CI) (CA INDEX NAME)



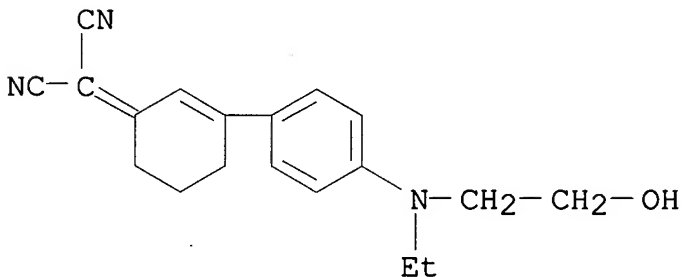
RN 548792-55-8 HCAPLUS

CN Propanedinitrile, [3-[4-[[2-[[[(1,1-dimethylethyl)dimethylsilyl]oxy]ethyl]ethylamino]phenyl]-2-cyclohexen-1-ylidene]- (9CI) (CA INDEX NAME)



RN 548792-56-9 HCAPLUS

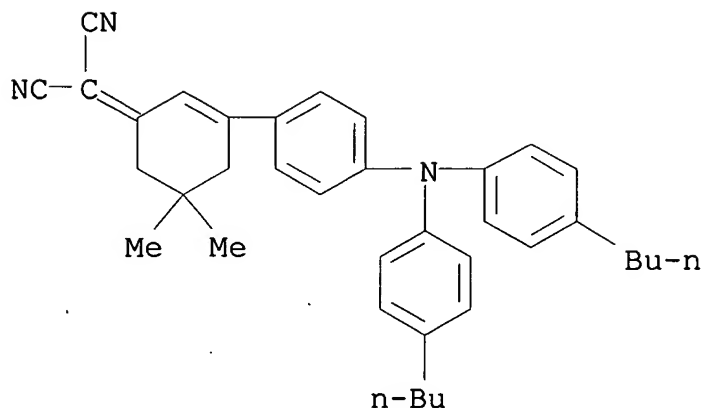
CN Propanedinitrile, [3-[4-[ethyl(2-hydroxyethyl)amino]phenyl]-2-cyclohexen-1-ylidene]- (9CI) (CA INDEX NAME)



RN 548792-57-0 HCAPLUS

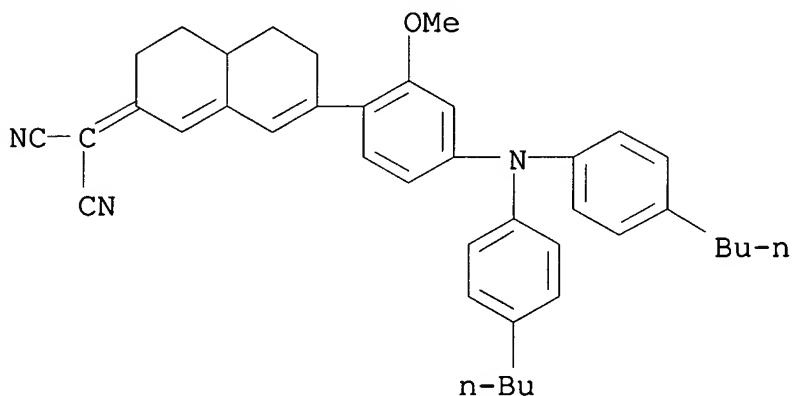
CN Propanedinitrile, [3-[4-[bis(4-butylphenyl)amino]phenyl]-5,5-

dimethyl-2-cyclohexen-1-ylidene]- (9CI) (CA INDEX NAME)



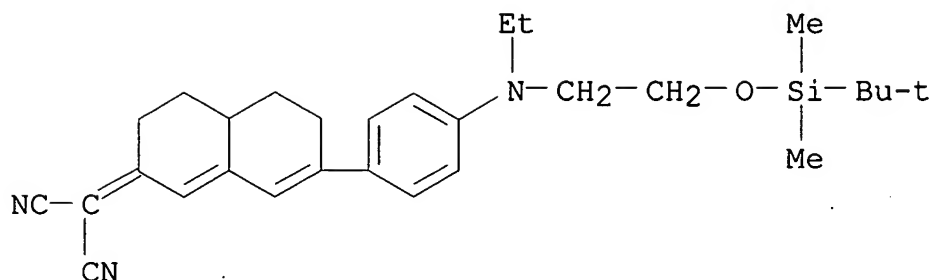
RN 548792-59-2 HCAPLUS

CN Propanedinitrile, [7-[4-[bis(4-butylphenyl)amino]-2-methoxyphenyl]-4,4a,5,6-tetrahydro-2(3H)-naphthalenylidene]- (9CI) (CA INDEX NAME)



RN 548792-60-5 HCAPLUS

CN Propanedinitrile, [7-[4-[[2-[[[(1,1-dimethylethyl)dimethylsilyl]oxy]ethyl]ethylamino]phenyl]-4,4a,5,6-tetrahydro-2(3H)-naphthalenylidene]- (9CI) (CA INDEX NAME)



CC 37-2 (Plastics Manufacture and Processing)  
Section cross-reference(s): 25, 73

IT **439248-57-4P 548792-52-5P 548792-53-6P**  
**548792-58-1P**

(chromophore; synthesis and stability studies of conformationally locked 4-(diarylamino)aryl- and 4-(dialkylamino)phenyl-substituted second-order nonlinear optical polyene chromophores)

IT **402961-94-8P 548792-54-7P 548792-55-8P**  
**548792-56-9P 548792-57-0P 548792-59-2P**  
**548792-60-5P**

(chromophore; synthesis and stability studies of conformationally locked 4-(diarylamino)aryl- and 4-(dialkylamino)phenyl-substituted second-order nonlinear optical polyene chromophores)

REFERENCE COUNT: 48 THERE ARE 48 CITED REFERENCES AVAILABLE  
FOR THIS RECORD. ALL CITATIONS AVAILABLE  
IN THE RE FORMAT

L13 ANSWER 10 OF 31 HCAPLUS COPYRIGHT 2005 ACS on STN  
ACCESSION NUMBER: 2002:592093 HCAPLUS  
DOCUMENT NUMBER: 137:147587  
TITLE: Electroluminescent material and device  
INVENTOR(S): Okada, Hisashi  
PATENT ASSIGNEE(S): Fuji Photo Film Co., Ltd., Japan  
SOURCE: Jpn. Kokai Tokkyo Koho, 24 pp:  
CODEN: JKXXAF  
DOCUMENT TYPE: Patent  
LANGUAGE: Japanese  
FAMILY ACC. NUM. COUNT: 1  
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
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USHA SHRESTHA REM 4B28

JP 2002220585

A2

20020809

JP 2001-16982

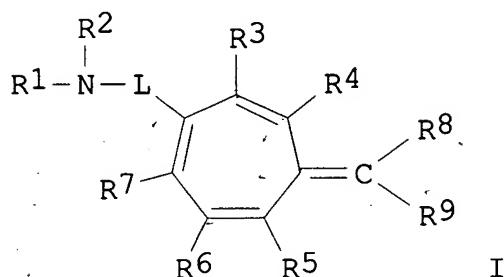
2001  
0125

PRIORITY APPLN. INFO.:

JP 2001-16982

2001  
0125OTHER SOURCE(S):  
GI

MARPAT 137:147587



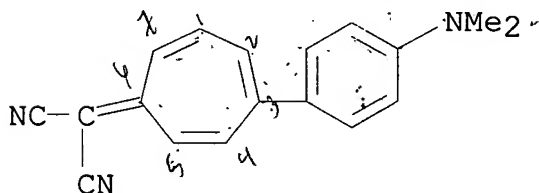
AB The invention refers to an electroluminescent material I [R1,2 = H, aliphatic hydrocarbon, aryl or heterocycllyl; R3-9 = H or substituent; ≥1 of R8 or R9 is electron withdrawing group; and L = conjugated linkages].

IT **219831-38-6P**

(electroluminescent material and device)

RN 219831-38-6 HCAPLUS

CN Propanedinitrile, [4-[4-(dimethylamino)phenyl]-2,4,6-cycloheptatrien-1-ylidene]- (9CI) (CA INDEX NAME)



IC ICM C09K011-06

USHA SHRESTHA

REM 4B28

ICS C09K011-06; H05B033-14  
CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)  
IT **219831-38-6P**  
(electroluminescent material and device)

L13 ANSWER 11 OF 31 HCAPLUS COPYRIGHT 2005 ACS on STN  
ACCESSION NUMBER: 2002:290341 HCAPLUS  
DOCUMENT NUMBER: 137:64535  
TITLE: Donor - acceptor oligoenes with a locked all-trans conformation: synthesis and linear and nonlinear optical properties  
AUTHOR(S): Lawrentz, Ulf; Grahn, Walter; Lukaszuk, Katarzyna; Klein, Christopher; Wortmann, Rudiger; Feldner, Andreas; Scherer, Dieter  
CORPORATE SOURCE: Institut fur Organische Chemie, Technische Universitat Braunschweig, Braunschweig, 38106, Germany  
SOURCE: Chemistry--A European Journal (2002), 8(7), 1573-1590  
CODEN: CEUJED; ISSN: 0947-6539  
PUBLISHER: Wiley-VCH Verlag GmbH  
DOCUMENT TYPE: Journal  
LANGUAGE: English  
OTHER SOURCE(S): CASREACT 137:64535

AB A general synthetic approach to variously polarized merocyanines and a cyanine with enhanced thermal and (photo)chemical stability by a locked all-trans conformation (derived from a rigidified hexatriene unit and a variety of common donor and acceptor groups) is presented as well as a systematic study of their (non)linear optical properties. Apart from the UV/visible absorption and fluorescence behavior, the ground- and excited-state dipoles, the first-, second-, and third-order mol. polarizabilities were determined by electrooptical absorption measurements and degenerate four-wave mixing (DFWM) techniques in solution. Large values for the second- and third-order polarizability up to  $\beta_0 = 461 + 10^{-50}$  CV-2m3 ( $1242 + 10^{-30}$  esu) and  $|\gamma_{LL}| = 183 + 10^{-60}$  CV-3m4 ( $15 + 10^{-34}$  esu) were found. The linear and nonlinear optical properties were related to the ground-state polarization and the resonance structure of the chromophores. In order to reveal the influence of the length of the polymethine chain (number of  $\pi$  electrons within the chromophore), some lower homologs shortened by one C=C (double) bond were also taken into account. The unexpectedly high  $\gamma$  values of some of the merocyanines could not be explained by a two-level model. Mol.

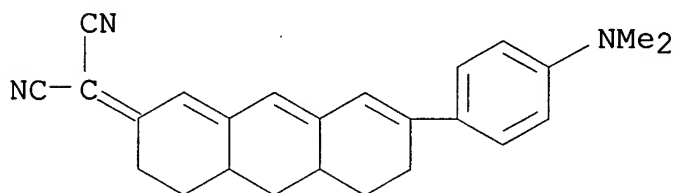
vibrational third-order polarizabilities (calculated from absolute Raman intensities in solution) were qual. correlated to the DFWM results. Furthermore, the dependence of the  $^{13}\text{C}$  NMR chemical shifts of the polymethine carbons within the merocyanines upon ground-state polarization was investigated and compared to those within a corresponding cyanine.

IT **280106-19-6P 439248-75-6P**

(blue merocyanine; preparation and linear and nonlinear optical properties of merocyanines)

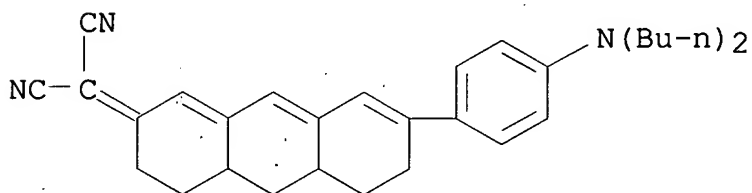
RN 280106-19-6 HCAPLUS

CN Propanedinitrile, [7-[4-(dimethylamino)phenyl]-4,4a,5,6,10,10a-hexahydro-2(3H)-anthracenylidene]- (9CI) (CA INDEX NAME)



RN 439248-75-6 HCAPLUS

CN Propanedinitrile, [7-[4-(dibutylamino)phenyl]-4,4a,5,6,10,10a-hexahydro-2(3H)-anthracenylidene]- (9CI) (CA INDEX NAME)



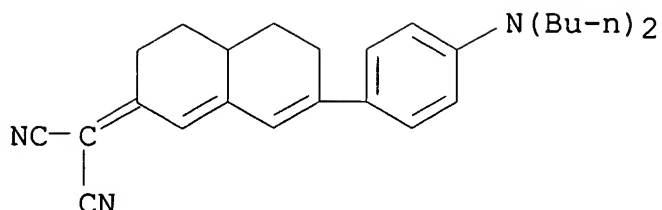
IT **439248-57-4P**

(dark blue merocyanine; preparation and linear and nonlinear optical properties of merocyanines)

RN 439248-57-4 HCAPLUS

CN Propanedinitrile, [7-[4-(dibutylamino)phenyl]-4,4a,5,6-tetrahydro-2(3H)-naphthalenylidene]- (9CI) (CA INDEX NAME)





CC 41-11 (Dyes, Organic Pigments, Fluorescent Brighteners, and Photographic Sensitizers)

Section cross-reference(s): 25, 27, 28, 73

IT **280106-19-6P** 280106-20-9P **439248-75-6P**

(blue merocyanine; preparation and linear and nonlinear optical properties of merocyanines)

IT **439248-57-4P**

(dark blue merocyanine; preparation and linear and nonlinear optical properties of merocyanines)

REFERENCE COUNT: 78 THERE ARE 78 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L13 ANSWER 12 OF 31 HCAPLUS COPYRIGHT 2005 ACS on STN

ACCESSION NUMBER: 2001:907633 HCAPLUS

DOCUMENT NUMBER: 136:238660

TITLE: Photostability of electro-optic polymers possessing chromophores with efficient amino donors and cyano-containing acceptors

AUTHOR(S): Galvan-Gonzalez, A.; Stegeman, G. I.; Jen, A. K-Y.; Wu, X.; Canva, M.; Kowalczyk, A. C.; Zhang, X. Q.; Lackritz, H. S.; Marder, S.; Thayumanavan, S.; Levina, G.

CORPORATE SOURCE: School of Optics and Center for Research and Education in Optics and Lasers, University of Central Florida, Orlando, FL, 32826, USA

SOURCE: Journal of the Optical Society of America B: Optical Physics (2001), 18(12), 1846-1853  
CODEN: JOBPDE; ISSN: 0740-3224

PUBLISHER: Optical Society of America

DOCUMENT TYPE: Journal

LANGUAGE: English

AB The photostability of various electrooptic active guest-host polymers, doped with chromophores that possess very efficient cyano-containing acceptors and dialkylamino- or diarylamino-benzenes, and also their extended thiophene analogs as bridging structures,

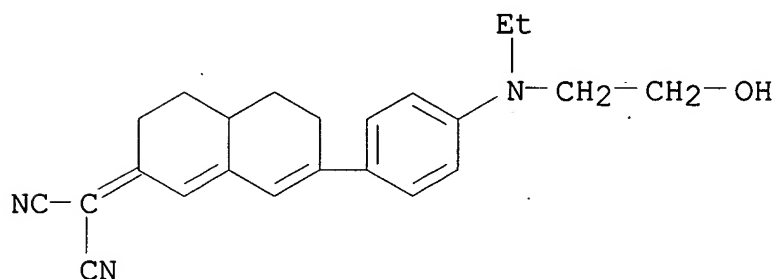
was studied over a broad wavelength range in the near IR and the visible. A variation of over 2 orders of magnitude was found in the probability that an absorbed photon will lead to a photodegraded chromophore. The most photostable chromophore contained a tricyanovinyl acceptor and a diarylaminobenzene bridge unit.

IT **402961-94-8**

(photostability of electro-optic polymers possessing chromophores with efficient amino donors and cyano-containing acceptors)

RN 402961-94-8 HCAPLUS

CN Propanedinitrile, [7-[4-[ethyl(2-hydroxyethyl)amino]phenyl]-4,4a,5,6-tetrahydro-2(3H)-naphthalenylidene]- (9CI) (CA INDEX NAME)



CC 73-10 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)

Section cross-reference(s): 22

IT 59223-16-4 63504-26-7 125113-96-4 213737-68-9 220127-20-8  
220127-21-9 274696-11-6 402961-93-7 **402961-94-8**

(photostability of electro-optic polymers possessing chromophores with efficient amino donors and cyano-containing acceptors)

REFERENCE COUNT: 26 THERE ARE 26 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L13 ANSWER 13 OF 31 HCAPLUS COPYRIGHT 2005 ACS on STN

ACCESSION NUMBER: 2001:886235 HCAPLUS

DOCUMENT NUMBER: 137:34447

TITLE: Nonlinear optical properties of specific polymethines: Influence of substituents and chain length

AUTHOR(S): Feldner, Andreas; Scherer, Dieter; Welscher,

Markus; Vogtmann, Thomas; Schwoerer, Markus;  
Lawrentz, Ulf; Laue, Thomas; Johannes,  
Hans-Hermann; Grahn, Walter

CORPORATE SOURCE: Lehrstuhl fur Experimentalphysik II and  
Bayreuther Institut fur Makromolekulforschung,  
Universitat Bayreuth, Bayreuth, D-95440,  
Germany

SOURCE: MCLC S&T, Section B: Nonlinear Optics (2000),  
26(1-3), 99-106  
CODEN: MCLOEB; ISSN: 1058-7268

PUBLISHER: Gordon & Breach Science Publishers

DOCUMENT TYPE: Journal

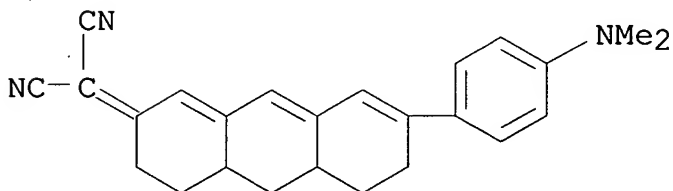
LANGUAGE: English

AB The nonlinear optical response of conjugated  $\pi$  electron systems  
of dye oligomers, including cyanines, rigid merocyanines, and  
squaraines were studied. The third-order nonlinear optical  
susceptibility ( $\chi^3$ ) of dye solns. was studied using THG [third  
harmonic generation], DFWM [degenerate four-wave mixing], and  
pump-probe expts. The mol. hyperpolarizability was obtained from  
variations of  $\chi^3$  with concentration. The two-photon absorption was  
determined from two-photon fluorescence data. Time-resolved  
measurements did not show any broadening of the third-order  
autocorrelation. The energy level and optical absorption  
cross-sections of two-photon excited states were also obtained  
from two-photon fluorescence data.

IT **280106-19-6**  
(effects of substituent and chain length on nonlinear optical  
properties of conjugated cyanine and merocyanine and squaraine  
polymethines)

RN 280106-19-6 HCAPLUS

CN Propanedinitrile, [7-[4-(dimethylamino)phenyl]-4,4a,5,6,10,10a-  
hexahydro-2(3H)-anthracenylidene]- (9CI) (CA INDEX NAME)



CC 41-6 (Dyes, Organic Pigments, Fluorescent Brighteners, and  
Photographic Sensitizers)  
Section cross-reference(s): 73

IT 38575-74-5 61575-71-1 61575-72-2 88475-75-6 223272-04-6  
280106-17-4 280106-18-5 **280106-19-6** 280106-20-9  
280106-21-0 280106-22-1 280106-27-6 426233-33-2  
436158-86-0 436158-88-2 436158-90-6 436158-92-8  
436158-94-0 436158-96-2 436158-98-4 436159-00-1  
436159-02-3 436159-04-5 436159-06-7 436159-08-9  
436159-10-3 436159-12-5 437609-19-3 437609-20-6  
437609-21-7

(effects of substituent and chain length on nonlinear optical properties of conjugated cyanine and merocyanine and squaraine polymethines)

REFERENCE COUNT: 4 THERE ARE 4 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

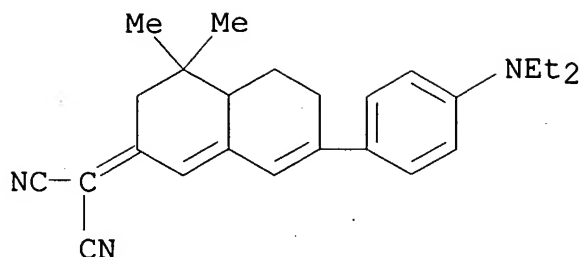
L13 ANSWER 14 OF 31 HCAPLUS COPYRIGHT 2005 ACS on STN  
ACCESSION NUMBER: 2001:853894 HCAPLUS  
DOCUMENT NUMBER: 136:207206  
TITLE: Chain flexibility and nonlinear optical properties of conjugated molecules  
AUTHOR(S): Del Zoppo, M.; Sugliani, S.; Zerbi, G.  
CORPORATE SOURCE: Dipartimento di Chimica Industriale e Ingegneria Chimica, Politecnico di Milano, Milan, 20133, Italy  
SOURCE: Synthetic Metals (2001), 124(1), 167-169  
CODEN: SYMEDZ; ISSN: 0379-6779  
PUBLISHER: Elsevier Science S.A.  
DOCUMENT TYPE: Journal  
LANGUAGE: English

AB The influence of conformational disorder on the nonlinear optical behavior of push-pull polyenes, is discussed with the help of vibrational spectroscopy. Vibrational mol. hyperpolarizabilities have been evaluated according to the vibrational method.

IT **213620-04-3 213620-08-7**  
(chain flexibility and nonlinear optical properties of conjugated mols.)

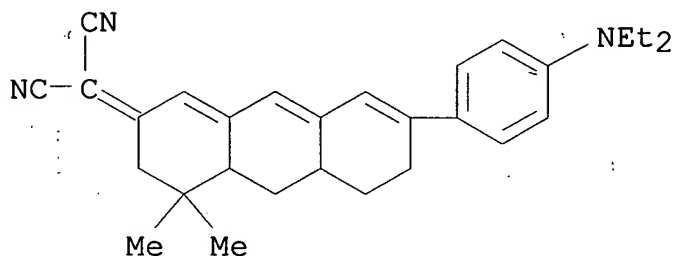
RN 213620-04-3 HCAPLUS

CN Propanedinitrile, [7-[4-(diethylamino)phenyl]-4,4a,5,6-tetrahydro-4,4-dimethyl-2(3H)-naphthalenylidene]- (9CI) (CA INDEX NAME)



RN 213620-08-7 HCAPLUS

CN Propanedinitrile, [7-[4-(diethylamino)phenyl]-4,4a,5,6,10,10a-hexahydro-4,4-dimethyl-2(3H)-anthracenylidene]-(9CI) (CA INDEX NAME)



CC 73-10 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)

Section cross-reference(s): 22

IT 182246-77-1 182246-78-2 **213620-04-3**  
**213620-08-7** 213620-09-8 228265-19-8

(chain flexibility and nonlinear optical properties of conjugated mols.)

REFERENCE COUNT: 8 THERE ARE 8 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L13 ANSWER 15 OF 31 HCAPLUS COPYRIGHT 2005 ACS on STN

ACCESSION NUMBER: 2001:763334 HCAPLUS

DOCUMENT NUMBER: 135:310664

TITLE: Sterically stabilized second-order nonlinear optical chromophores

INVENTOR(S): Zhang, Cheng; Fetterman, Harold R.; Steier, William; Michael, Joseph

PATENT ASSIGNEE(S): Pacific Wave Industries, Inc., USA  
 SOURCE: PCT Int. Appl., 50 pp.  
 CODEN: PIXXD2  
 DOCUMENT TYPE: Patent  
 LANGUAGE: English  
 FAMILY ACC. NUM. COUNT: 10  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2001077749	A1	20011018	WO 2001-US11613	2001 0409

W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CR, CU, CZ, DE, DK, DM, DZ, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, UZ, VN, YU, ZA, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM  
 RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG

US 6616865	B1	20030909	US 2000-546930	2000 0411
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PRIORITY APPLN. INFO.: US 2000-546930; A 2000 0411

US 1998-122806	A2	1998 0727
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US 2000-488422	A2	2000 0120
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OTHER SOURCE(S): MARPAT 135:310664

AB Nonlinear optical devices comprising an active element formed from a chromophore including an electron donor group, an electron acceptor group, and a  $\pi^2$ -conjugate fused-ring bridge structure between the electron donor group and the electron acceptor group

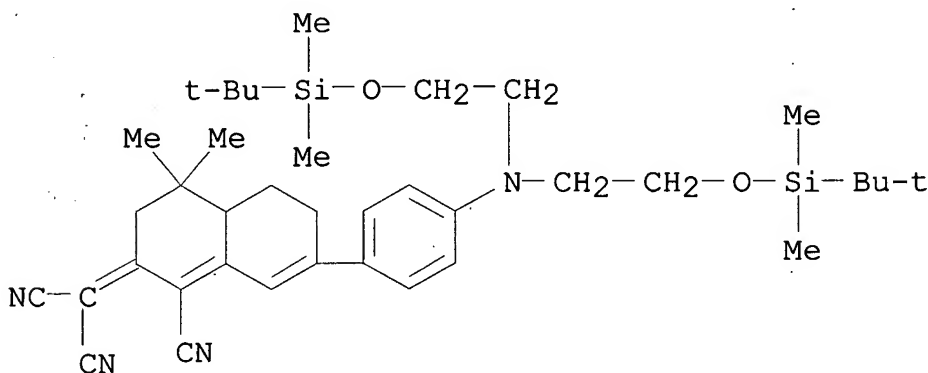
are described in which the electron donor group and/or the electron acceptor group (are) is directly connected to the bridge structure or 1 of the electron donor group and the electron acceptor group is connected to the bridge structure with a conjugated diene while the other is directly connected.

IT **367272-45-5P**

(nonlinear optical devices using sterically stabilized second-order nonlinear optical chromophores)

RN 367272-45-5 HCAPLUS

CN Propanedinitrile, [7-[4-[bis[2-[(1,1-dimethylethyl)dimethylsilyl]oxy]ethyl]amino]phenyl]-1-cyano-4,4a,5,6-tetrahydro-4,4-dimethyl-2(3H)-naphthalenyldiene]- (9CI)  
(CA INDEX NAME)



IC ICM G02F001-35

ICS F21V009-00

CC 73-10 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)

Section cross-reference(s): 24

IT 367272-34-2P 367272-38-6P 367272-40-0P 367272-41-1P

**367272-45-5P**

(nonlinear optical devices using sterically stabilized second-order nonlinear optical chromophores)

REFERENCE COUNT: 5 THERE ARE 5 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L13 ANSWER 16 OF 31 HCAPLUS COPYRIGHT 2005 ACS on STN

ACCESSION NUMBER: 2001:610703 HCAPLUS

DOCUMENT NUMBER: 135:378137

TITLE: Chain flexibility and nonlinear optical

USHA SHRESTHA REM 4B28

properties in polyenes within a two-state (VB-CT) model

AUTHOR(S): Sugliani, S.; Del Zoppo, M.; Zerbi, G.; Shu, C.-F.

CORPORATE SOURCE: Politecnico di Milano, Dipartimento di Chimica Industriale e Ingegneria Chimica, Milan, 20133, Italy

SOURCE: Chemical Physics (2001), 271(1-2), 127-136  
CODEN: CMPHC2; ISSN: 0301-0104

PUBLISHER: Elsevier Science B.V.

DOCUMENT TYPE: Journal

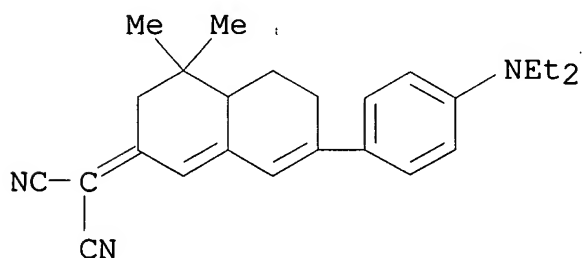
LANGUAGE: English

AB A simple 2-state model justifies the dependence of 1st-order hyperpolarizabilities ( $\beta$ ) of push-pull polyenes on conformational disorder. Particular relevance is given to the calcn. of the vibrational properties (i.e. force consts., IR and Raman intensities) which are used for the evaluation of the vibrational contribution to static mol. hyperpolarizabilities. The theor. predictions are compared with exptl. measurements of the quantities of interest on suitable mols. purposely synthesized.

IT **213620-04-3 213620-08-7**  
(chain flexibility and nonlinear optical properties within two-state valence-bond charge-transfer model)

RN 213620-04-3 HCAPLUS

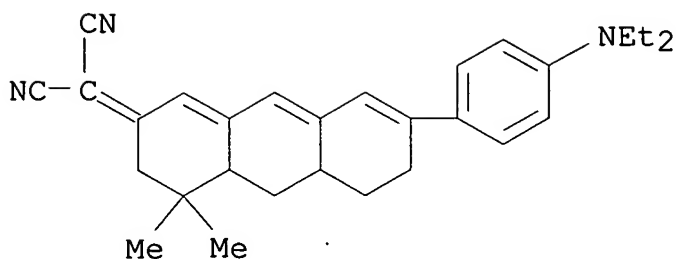
CN Propanedinitrile, [7-[4-(diethylamino)phenyl]-4,4a,5,6-tetrahydro-4,4-dimethyl-2(3H)-naphthalenyldene]- (9CI) (CA INDEX NAME)



RN 213620-08-7 HCAPLUS

CN Propanedinitrile, [7-[4-(diethylamino)phenyl]-4,4a,5,6,10,10a-hexahydro-4,4-dimethyl-2(3H)-anthracenyldene]- (9CI) (CA INDEX NAME)





CC 73-10 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)

Section cross-reference(s): 22

IT 1211-40-1, 4-Amino-4'-nitro-1,1'-biphenyl 168561-00-0  
200636-12-0, all-trans-1,1-Dicyano-6-dimethylamino-1,3,5-hexatriene **213620-04-3 213620-08-7**  
245421-71-0 374553-79-4 374553-80-7 374553-81-8  
374553-82-9

(chain flexibility and nonlinear optical properties within two-state valence-bond charge-transfer model)

REFERENCE COUNT: 33 THERE ARE 33 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L13 ANSWER 17 OF 31 HCAPLUS COPYRIGHT 2005 ACS on STN

ACCESSION NUMBER: 2000:545304 HCAPLUS

DOCUMENT NUMBER: 134:131454

TITLE: Synthesis of pyranothiazoles and spiro-thiazolidinediones

AUTHOR(S): Rao, V. S.; Gupta, S. V. S. Arun Kumar; Giridhar, P.; Ganesh, N. Jai; Reddy, B. S.

CORPORATE SOURCE: Chemistry Group, Birla Institute of Technology and Science, Pilani, India

SOURCE: Indian Journal of Heterocyclic Chemistry (2000), 9(4), 247-250

CODEN: IJCHEI; ISSN: 0971-1627

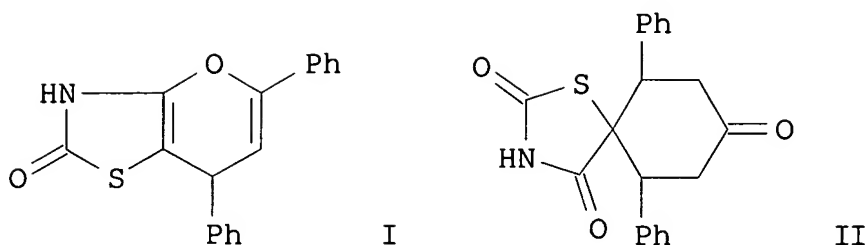
PUBLISHER: Prof. R. S. Varma

DOCUMENT TYPE: Journal

LANGUAGE: English

OTHER SOURCE(S): CASREACT 134:131454

GI



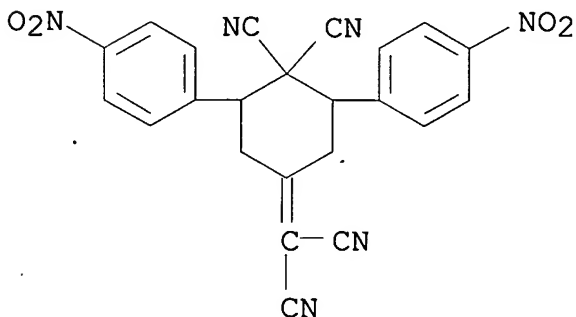
AB    Pyranothiazoles, e.g., I, and spiro-thiazolidinediones, e.g., II, were synthesized by reaction of 2,4-thiazolidinedione with chalcones and  $\alpha$ -cyano- $\alpha,\beta$ -unsatd. nitriles in the presence of mild/strong bases. Structural assignments of the new compds. are based on anal. and spectral data.

IT 321914-12-9

(cyclocondensation reaction with 2,4-thiazolidinedione)

RN 321914-12-9 HCAPLUS

CN 1,1-Cyclohexanedicarbonitrile, 4-(dicyanomethylene)-2,6-bis(4-nitrophenyl)- (9CI) (CA INDEX NAME)



CC 28-7 (Heterocyclic Compounds (More Than One Hetero Atom))

IT 94-41-7 538-58-9 614-48-2 621-21-6 621-98-7 956-04-7

959-33-1      1867-38-5      2051-07-2      2700-22-3      2826-25-7

2826-26-8      2972-85-2      3111-61-3      4224-87-7      4224-96-8

5332-98-9      5447-87-0      6552-71-2      18278-29-0      19672-59-4

19672-63-0      25288-75-9      26088-78-8      37620-37-4      38552-39-5

54006-55-2      62221-11-8      66896-93-3      321914-06-1      321914-07-2

321914-08-3      321914-09-4      321914-10-7      321914-11-8

321914-12-9      321914-13-0      321914-14-1

(cyclocondensation reaction with 2,4-thiazolidinedione)

REFERENCE COUNT: 11 THERE ARE 11 CITED REFERENCES AVAILABLE

USHA SHRESTHA      REM 4B28

FOR THIS RECORD. ALL CITATIONS AVAILABLE  
IN THE RE FORMAT

L13 ANSWER 18 OF 31 HCAPLUS COPYRIGHT 2005 ACS on STN

ACCESSION NUMBER: 2000:346335 HCAPLUS

DOCUMENT NUMBER: 133:105868

TITLE: Polyquinolines: multifunctional polymers for  
electro-optic and light-emitting applications

AUTHOR(S): Jen, Alex K.-Y.; Ma, Hong

CORPORATE SOURCE: Department of Chemistry, Northeastern  
University, Boston, MA, 02115, USA

SOURCE: Materials Research Society Symposium  
Proceedings (2000), 558(Flat-Panel Displays  
and Sensors--Principles, Materials and  
Processes), 469-480

CODEN: MRSPDH; ISSN: 0272-9172

PUBLISHER: Materials Research Society

DOCUMENT TYPE: Journal

LANGUAGE: English

AB A versatile, and generally applicable modular approach for making second-order nonlinear optical (NLO) side-chain aromatic polyquinolines has been developed. This approach emphasizes the ease of incorporating NLO chromophores onto the pendent Ph moieties of parent polyquinolines at the final stage via mild Mitsunobu reaction. This method provides the synthesis of polyquinolines with a broad variation of the polymer backbones and great flexibility in the selection of NLO chromophores. These side-chain NLO polyquinolines demonstrate high electro-optic (E-O) activity (up to 35 pm/V at 830 nm and 22 pm/V at 1300 nm, resp.) and a good combination of thermal, optical, elec. and mech. properties. Comparatively, two new electroluminescent (EL) polyquinolines have been prepared via the Friedlander condensation and nucleophilic reaction. The resulting polymers contain a bipolar property with both an efficient hole-transporting moiety, tetraphenyldiaminobiphenyl (TPD), and an electron affinitive light-emitting moiety, bis-quinoline. In addition, they possess high thermal stability, excellent electrochem. reversibility, good thin film-forming ability, and bright light-emitting property. Elec. characterization of two-layer diode devices based on the configurations of ITO/CuPc/TPD-PQ or TPD-PQE/Al showed excellent electroluminescence performance (a rectification ratio greater than 105 and a low turn-on voltage of less than 4 V).

IT 208345-48-6DP, polyquinoline ether derivs.

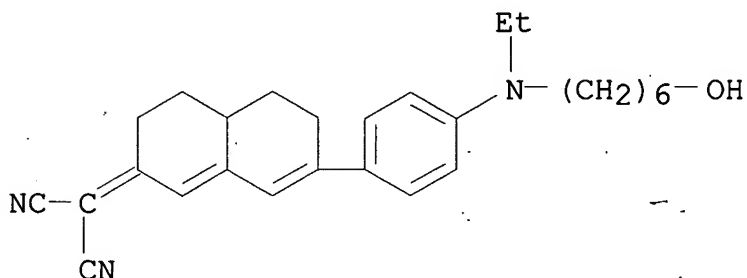
244023-21-0DP, polyquinoline ether derivs.

(preparation and characterization and applications of

multifunctional polyquinolines for electrooptic and light-emitting devices)

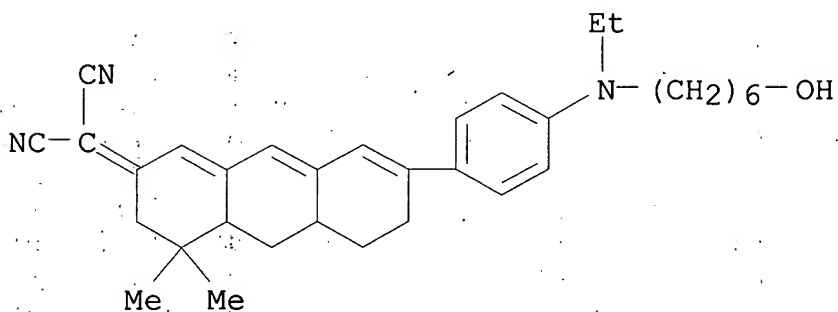
RN 208345-48-6 HCAPLUS

CN Propanedinitrile, [7-[4-[ethyl(6-hydroxyhexyl)amino]phenyl]-4,4a,5,6-tetrahydro-2(3H)-naphthalenylidene]- (9CI) (CA INDEX NAME)



RN 244023-21-0 HCAPLUS

CN Propanedinitrile, [7-[4-[ethyl(6-hydroxyhexyl)amino]phenyl]-4,4a,5,6,10,10a-hexahydro-4,4-dimethyl-2(3H)-anthracenylidene]- (9CI) (CA INDEX NAME)



CC 38-3 (Plastics Fabrication and Uses)

Section cross-reference(s): 73

IT **208345-48-6DP**, polyquinoline ether derivs.

208345-49-7DP, polyquinoline ether derivs. 213814-56-3P

213814-63-2P 213814-67-6P 213814-71-2P 244023-17-4DP,

polyquinoline ether derivs. 244023-18-5DP, polyquinoline ether derivs. 244023-19-6DP, polyquinoline ether derivs.

244023-20-9DP, polyquinoline ether derivs. **244023-21-0DP**, polyquinoline ether derivs.

(preparation and characterization and applications of

multifunctional polyquinolines for electrooptic and  
light-emitting devices)

REFERENCE COUNT: 29 THERE ARE 29 CITED REFERENCES AVAILABLE  
FOR THIS RECORD. ALL CITATIONS AVAILABLE  
IN THE RE FORMAT

L13 ANSWER 19 OF 31 HCAPLUS COPYRIGHT 2005 ACS on STN

ACCESSION NUMBER: 2000:36388 HCAPLUS

DOCUMENT NUMBER: 133:75324

TITLE: Rigidized merocyanines: synthesis and linear  
and nonlinear optical properties

AUTHOR(S): Grahn, Walter; Lawrentz, Ulf; Lukaszuk,  
Katarzyna; Wortmann, Ruediger; Feldner,  
Andreas; Scherer, Dieter; Schwoerer, Markus;  
Bendig, Juergen; Helm, Siegrun; Dix, Ina;  
Jones, Peter George

CORPORATE SOURCE: Institute for Organic Chemistry, Tech. Univ.  
Braunschweig, Braunschweig, Germany

SOURCE: Proceedings of SPIE-The International Society  
for Optical Engineering (1999), 3796(Organic  
Nonlinear Optical Materials), 247-256  
CODEN: PSISDG; ISSN: 0277-786X

PUBLISHER: SPIE-The International Society for Optical  
Engineering

DOCUMENT TYPE: Journal

LANGUAGE: English

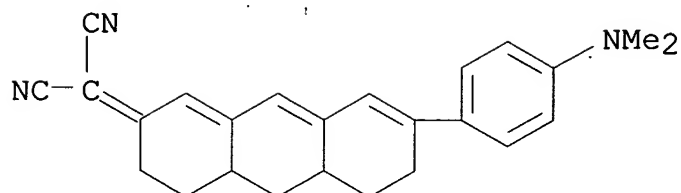
AB We have designed and synthesized donor/acceptor-substituted  
hexatrienes in which the configuration is locked by a  
hexahydroanthracene frame. Donors and acceptors of varying  
strength were introduced. In order to assess the potential of our  
merocyanines for NLO and photorefractive (PR) applications, we  
have measured their linear and nonlinear optical properties and  
determined the NLO and PR figures-of-merit (FOMs), resp. One  
merocyanine exhibits a very large Kerr FOM. The thermal stability  
of the new merocyanines is sufficiently high for photonic  
applications. In order to investigate and to correlate the bond  
length alternation of our oligoenes with linear and nonlinear  
optical properties we have carried out X-ray structure detns.

IT **280106-19-6P**

(dye; synthesis and linear and nonlinear optical properties of  
rigidized merocyanines)

RN 280106-19-6 HCAPLUS

CN Propanedinitrile, [7-[4-(dimethylamino)phenyl]-4,4a,5,6,10,10a-  
hexahydro-2(3H)-anthracenylidene]- (9CI) (CA INDEX NAME)



CC 41-11 (Dyes, Organic Pigments, Fluorescent Brighteners, and Photographic Sensitizers)

Section cross-reference(s): 73, 75

IT **280106-19-6P** 280106-20-9P 280106-21-0P 280106-22-1P  
280106-25-4P 280106-27-6P

(dye; synthesis and linear and nonlinear optical properties of rigidized merocyanines)

REFERENCE COUNT: 21 THERE ARE 21 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L13 ANSWER 20 OF 31 HCAPLUS COPYRIGHT 2005 ACS on STN

ACCESSION NUMBER: 2000:36383 HCAPLUS

DOCUMENT NUMBER: 133:75323

TITLE: Systematic study on the optimization of the first hyperpolarizabilities of methine dyes

AUTHOR(S): Ritzel, Christian; Schmaelzlin, Elmar; Braeuchle, Christoph R.; Meerholz, Klaus; Roessler, Alexander; Ernst, Christian; Wichern, Juergen; Boldt, Peter

CORPORATE SOURCE: Institut fuer Physikalische Chemie, Univ. Muenchen, Munich, Germany

SOURCE: Proceedings of SPIE-The International Society for Optical Engineering (1999), 3796(Organic Nonlinear Optical Materials), 202-208

CODEN: PSISDG; ISSN: 0277-786X

PUBLISHER: SPIE-The International Society for Optical Engineering

DOCUMENT TYPE: Journal

LANGUAGE: English

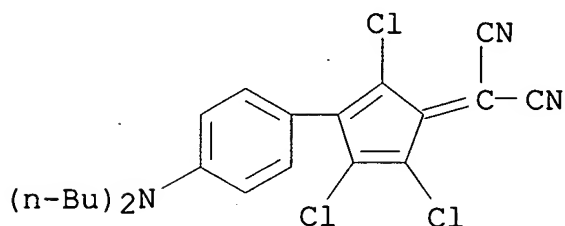
AB Methine dyes are frequently used as nonlinear optical (NLO) chromophores. In the case of our dyes, both the substitution of the methine proton by a cyano group and the substitution of the methine carbon by nitrogen lead to a strong bathochromic shift. In this work the influence of these modifications to the first hyperpolarizability is systematically investigated.

IT **280129-91-1 280129-92-2**

(substituent and structure effects on NLO first hyperpolarizabilities of methine dyes)

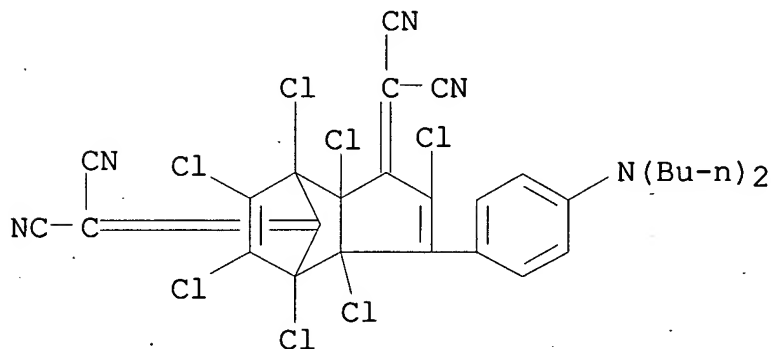
RN 280129-91-1 HCAPLUS

CN Propanedinitrile, [2,3,5-trichloro-4-[4-(dibutylamino)phenyl]-2,4-cyclopentadien-1-ylidene]- (9CI) (CA INDEX NAME)



RN 280129-92-2 HCAPLUS

CN Propanedinitrile, 2,2'-[2,3a,4,5,6,7,7a-heptachloro-3-[4-(dibutylamino)phenyl]-3a,4,7,7a-tetrahydro-4,7-methano-1H-indene-1,8-diylidene]bis- (9CI) (CA INDEX NAME)



CC 41-11 (Dyes, Organic Pigments, Fluorescent Brighteners, and Photographic Sensitizers)

Section cross-reference(s): 73

IT 63504-26-7 95640-47-4 109347-61-7 109347-67-3 122533-96-4  
 124995-13-7 130779-12-3 130779-15-6 130779-17-8  
 130779-26-9 130779-27-0 195823-20-2 243991-38-0  
 263556-44-1 280129-85-3 280129-86-4 280129-87-5  
 280129-88-6 280129-89-7 280129-90-0 **280129-91-1**  
**280129-92-2**

(substituent and structure effects on NLO first

hyperpolarizabilities of methine dyes)

REFERENCE COUNT: 16 THERE ARE 16 CITED REFERENCES AVAILABLE  
FOR THIS RECORD. ALL CITATIONS AVAILABLE  
IN THE RE FORMAT

L13 ANSWER 21 OF 31 HCAPLUS COPYRIGHT 2005 ACS on STN

ACCESSION NUMBER: 1999:436764 HCAPLUS

DOCUMENT NUMBER: 131:229362

TITLE: A Convenient Modular Approach of  
Functionalizing Aromatic Polyquinolines for  
Electrooptic Devices

AUTHOR(S): Ma, Hong; Jen, Alex K.-Y.; Wu, Jianyao; Wu,  
Xiaoming; Liu, Sen; Shu, Ching-Fong; Dalton,  
Larry R.; Marder, Seth R.; Thayumanavan,  
Sankaran

CORPORATE SOURCE: Department of Chemistry, Northeastern  
University, Boston, MA, 02115, USA

SOURCE: Chemistry of Materials (1999), 11(8),  
2218-2225

CODEN: CMATEX; ISSN: 0897-4756

PUBLISHER: American Chemical Society

DOCUMENT TYPE: Journal

LANGUAGE: English

AB A versatile and generally applicable synthetic method for making second-order nonlinear optical (NLO) side-chain aromatic polyquinolines has been developed. This approach emphasizes the ease of incorporating NLO chromophores onto the pendent Ph moieties of parent polyquinolines at the final stage via a mild Mitsunobu reaction, which provides the synthesis of NLO polyquinolines with a broad variation of polymer backbones and great flexibility in the selection of chromophores. The synthesized NLO side-chain polyquinolines possess high glass transition temperature ( $T_g > 200^\circ\text{C}$ ), good processability, and excellent thermal stability. The promising results of electrooptic (EO) activity (up to 35 pm/V at 830 nm and 22 pm/V at 1300 nm), optical loss (1.5-2.5 dB/cm), and long-term stability of the poling-induced polar order ( $r_{33}$  values retained >90% of their original values at  $85^\circ\text{C}$  for more than 1000 h) have demonstrated the advantages of this design approach. The excellent combination of these properties in the resulting polymers have also provided a great promise in the development of EO devices.

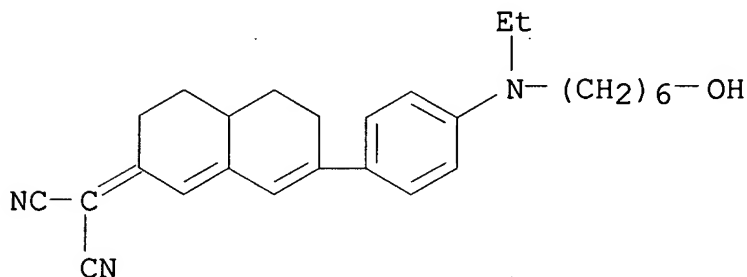
IT **208345-48-6DP**, reaction products with polyquinolines  
**244023-21-0DP**, reaction products with polyquinolines  
(preparation of nonlinear optical materials by functionalizing



hydroxyphenyl group-containing polyquinolines with chromophores)

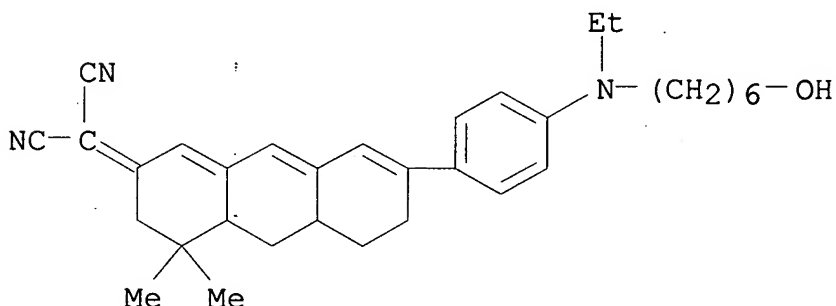
RN 208345-48-6 HCAPLUS

CN Propanedinitrile, [7-[4-[ethyl(6-hydroxyhexyl)amino]phenyl]-4,4a,5,6-tetrahydro-2(3H)-naphthalenyldiene]- (9CI) (CA INDEX NAME)



RN 244023-21-0 HCAPLUS

CN Propanedinitrile, [7-[4-[ethyl(6-hydroxyhexyl)amino]phenyl]-4,4a,5,6,10,10a-hexahydro-4,4-dimethyl-2(3H)-anthracenyldiene]- (9CI) (CA INDEX NAME)



CC 37-3 (Plastics Manufacture and Processing)

Section cross-reference(s): 73, 76

IT 208345-47-5DP, hydroxy derivs., reaction products with chromophores **208345-48-6DP**, reaction products with polyquinolines 208345-49-7DP, reaction products with polyquinolines 208345-50-0DP, hydroxy derivs., reaction products with chromophores 208345-51-1DP, hydroxy derivs., reaction products with chromophores 244023-17-4DP, reaction products with polyquinolines 244023-18-5DP, reaction products with polyquinolines 244023-19-6DP, reaction products with polyquinolines 244023-20-9DP, reaction products with

polyquinolines **244023-21-ODP**, reaction products with  
polyquinolines

(preparation of nonlinear optical materials by functionalizing  
hydroxyphenyl group-containing polyquinolines with chromophores)

REFERENCE COUNT: 47 THERE ARE 47 CITED REFERENCES AVAILABLE  
FOR THIS RECORD. ALL CITATIONS AVAILABLE  
IN THE RE FORMAT

L13 ANSWER 22 OF 31 HCAPLUS COPYRIGHT 2005 ACS on STN

ACCESSION NUMBER: 1999:305599 HCAPLUS

DOCUMENT NUMBER: 131:73415

TITLE: Synthesis and structure of NLO-active  
8,8-dicyano-3-[4-(dimethylamino)phenyl]heptaful-  
vene

AUTHOR(S): Otani, Hiroyuki; Mizuguchi, Jin

CORPORATE SOURCE: Department of Environmental Science, Faculty  
of Education and Human Sciences, Yokohama  
National University, Yokohama, 240-8501, Japan

SOURCE: Chemistry Letters (1999), (5), 389-390

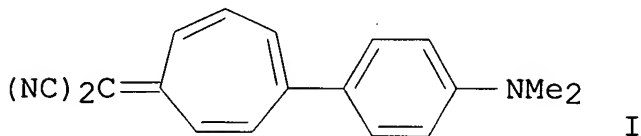
CODEN: CMLTAG; ISSN: 0366-7022

PUBLISHER: Chemical Society of Japan

DOCUMENT TYPE: Journal

LANGUAGE: English

GI



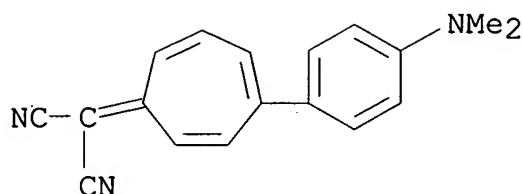
AB Some new 8,8-dicyanophenylheptafulvenes have been synthesized,  
among which the title compound (I) is found to crystallize in the  
polar space group of P1 and show nonlinear optical  
characteristics.

IT **219831-38-6P**

(preparation and nonlinear optical characteristics of)

RN 219831-38-6 HCAPLUS

CN Propanedinitrile, [4-[4-(dimethylamino)phenyl]-2,4,6-  
cycloheptatrien-1-ylidene]- (9CI) (CA INDEX NAME)



CC 25-20 (Benzene, Its Derivatives, and Condensed Benzenoid Compounds)

Section cross-reference(s): 22

IT **219831-38-6P**

(preparation and nonlinear optical characteristics of)

REFERENCE COUNT: 10 THERE ARE 10 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L13 ANSWER 23 OF 31 HCAPLUS COPYRIGHT 2005 ACS on STN

ACCESSION NUMBER: 1999:37503 HCAPLUS

DOCUMENT NUMBER: 130:188965

TITLE: A novel NLO-active, non-benzenoid compound based on 8,8-dicyano-3-(4'-dimethylamino)-phenylheptafulvene: - crystal and electronic structures -

AUTHOR(S): Mizuguchi, Jin; Suzuki, Takao; Matsumoto, Shinya; Otani, Hiroyuki

CORPORATE SOURCE: Department of Applied Physics, Faculty of Engineering, Yokohama National University, Yokohama, 240-8501, Japan

SOURCE: Molecular Crystals and Liquid Crystals Science and Technology, Section A: Molecular Crystals and Liquid Crystals (1998), 322, 55-62  
CODEN: MCLCE9; ISSN: 1058-725X

PUBLISHER: Gordon & Breach Science Publishers

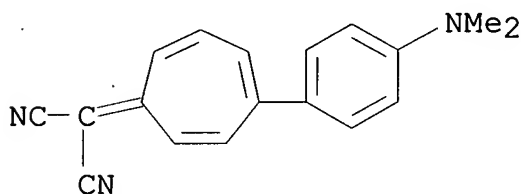
DOCUMENT TYPE: Journal

LANGUAGE: English

AB Some new 8,8-dicyanoheptafulvene derivs. were synthesized, among which 8,8-dicyano-3-(4'-N,N-dimethylaminophenyl)heptafulvene (1) crystallized in a polar space group of P1 showing NLO characteristics. The mol. is composed of a strong acceptor of the dicyanomethylidene group and a strong donor of the dimethylamino group, both of which are combined with the  $\pi$ -conjugated heptafulvene skeleton. 1 is typical of an intramol. CT compound, for which high 2nd-order hyperpolarizability is expected. For

this reason, electronic structure was studied in solution and in the solid state from the mol. and crystal structures together with MO calcns. The solid-state spectrum is strikingly different from the solution spectrum because of the extent of conjugation between the 7-membered ring and the Ph ring. There are 2 electronic transitions A (.apprx.450 nm) and B (580-650 nm) in the solid. Band A is due mainly to the 8,8-dicyanoheptafulvene skeleton while band B is of charge-transfer character due to the dicyanomethylidene and dimethylamino groups.

IT **219831-38-6**, 8,8-Dicyano-3-(4'-N,N-dimethylaminophenyl)heptafulvene  
(crystal and electronic structure of)  
RN 219831-38-6 HCAPLUS  
CN Propanedinitrile, [4-[4-(dimethylamino)phenyl]-2,4,6-cycloheptatrien-1-ylidene]- (9CI) (CA INDEX NAME)



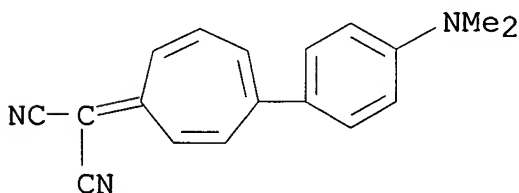
CC 73-10 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)  
Section cross-reference(s): 22, 75  
IT **219831-38-6**, 8,8-Dicyano-3-(4'-N,N-dimethylaminophenyl)heptafulvene 219831-39-7  
(crystal and electronic structure of)  
REFERENCE COUNT: 9 THERE ARE 9 CITED REFERENCES AVAILABLE  
FOR THIS RECORD. ALL CITATIONS AVAILABLE  
IN THE RE FORMAT

L13 ANSWER 24 OF 31 HCAPLUS COPYRIGHT 2005 ACS on STN  
ACCESSION NUMBER: 1999:3602 HCAPLUS  
DOCUMENT NUMBER: 130:124765  
TITLE: Electronic Characterization of Nonlinear  
Optically Active 8,8-Dicyano-3-(4'-N,N-dimethylamino)phenylheptafulvene  
AUTHOR(S): Mizuguchi, J.; Suzuki, T.; Matsumoto, S.;  
Otani, H.  
CORPORATE SOURCE: Department of Applied Physics Faculty of  
Engineering, Yokohama National University,

SOURCE: Yokohama, 240-8501, Japan  
Journal of Physical Chemistry B (1999),  
103(3), 426-430  
CODEN: JPCBFK; ISSN: 1089-5647  
PUBLISHER: American Chemical Society  
DOCUMENT TYPE: Journal  
LANGUAGE: English

AB Some new 8,8-dicyanoheptafulvene derivs. have been synthesized, among which the title compound (1a) is found to crystallize in the polar space group of P1 showing nonlinear optical characteristics. The mol. is composed of a strong acceptor of the dicyanomethylidene group and a strong donor of the dimethylamino group, both of which are combined with the  $\pi$ -conjugated heptafulvene skeleton. Compound 1a is therefore typical of an intramol. charge transfer compound, for which a high second-order hyperpolarizability is expected. For this reason, the electronic structure has been investigated in solution and in the solid state on the basis of the mol. and crystal structures together with MO calcns. The solid-state spectrum is found to be strikingly different from the solution spectrum because of the difference in effective conjugation between the seven-membered ring and Ph ring. There are two electronic transitions A (about 450 nm) and B (580-650 nm) in the solid. Band A is due mainly to the 8,8-dicyanoheptafulvene skeleton, while band B is of charge-transfer character due to the dicyanomethylidene and dimethylamino groups.

IT **219831-38-6P**, 8,8-Dicyano-3-(4'-N,N-dimethylamino)phenylheptafulvene  
(preparation, crystallog. and absorption spectra and MO study of dicyano(dimethylamino)phenylheptafulvene)  
RN 219831-38-6 HCAPLUS  
CN Propanedinitrile, [4-[4-(dimethylamino)phenyl]-2,4,6-cycloheptatrien-1-ylidene]- (9CI) (CA INDEX NAME)



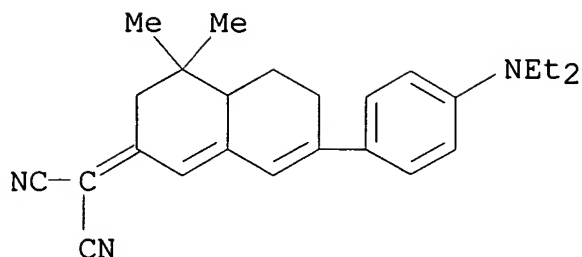
CC 22-9 (Physical Organic Chemistry)  
Section cross-reference(s): 75

IT **219831-38-6P**, 8,8-Dicyano-3-(4'-N,N-dimethylamino)phenylheptafulvene  
(preparation, crystallog. and absorption spectra and MO study of  
dicyano(dimethylamino)phenylheptafulvene)  
REFERENCE COUNT: 10 THERE ARE 10 CITED REFERENCES AVAILABLE  
FOR THIS RECORD. ALL CITATIONS AVAILABLE  
IN THE RE FORMAT

L13 ANSWER 25 OF 31 HCAPLUS COPYRIGHT 2005 ACS on STN  
ACCESSION NUMBER: 1998:600689 HCAPLUS  
DOCUMENT NUMBER: 129:295773  
TITLE: Nonlinear optical chromophores with  
configuration-locked polyenes possessing  
enhanced thermal stability and chemical  
stability  
AUTHOR(S): Shu, Ching-Fong; Shu, Yuan-Cheng; Gong,  
Zhi-Hao; Peng, Shie-Ming; Lee, Gene-Hsiang;  
Jen, Alex K. Y.  
CORPORATE SOURCE: Department of Applied Chemistry, National  
Chiao Tung University, Hsin-Chu, 30035, Taiwan  
SOURCE: Chemistry of Materials (1998), 10(11),  
3284-3286  
CODEN: CMATEX; ISSN: 0897-4756  
PUBLISHER: American Chemical Society  
DOCUMENT TYPE: Journal  
LANGUAGE: English

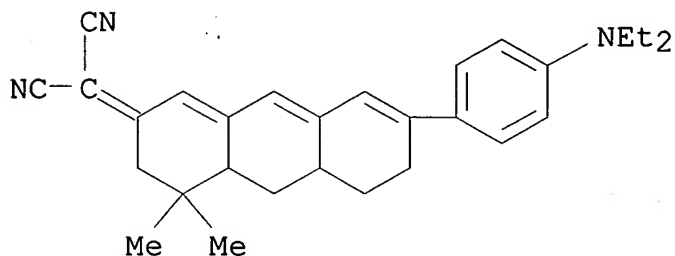
AB Dipolar nonlinear optical chromophores were synthesized with all  
of the methine groups incorporated into rigidified annulated  
rings. The configuration-locking approach gave chromophores with  
enhanced thermal stability for device applications. UV-visible  
spectra and x-ray crystallog. showed that the rigidity of the  
annulated rings does not diminish the planarity and the electron  
delocalization efficiency of the polyenic chain.

IT **213620-04-3P 213620-08-7P**  
(UV-visible spectra and x-ray crystallog. of nonlinear optical  
chromophore, and thermal stability in polyquinoline films)  
RN 213620-04-3 HCAPLUS  
CN Propanedinitrile, [7-[4-(diethylamino)phenyl]-4,4a,5,6-tetrahydro-  
4,4-dimethyl-2(3H)-naphthalenyldiene]- (9CI) (CA INDEX NAME)



RN 213620-08-7 HCAPLUS

CN Propanedinitrile, [7-[4-(diethylamino)phenyl]-4,4a,5,6,10,10a-hexahydro-4,4-dimethyl-2(3H)-anthracenylidene]-(9CI) (CA INDEX NAME)



CC 73-10 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)

Section cross-reference(s): 22

IT **213620-04-3P 213620-08-7P**

(UV-visible spectra and x-ray crystallog. of nonlinear optical chromophore, and thermal stability in polyquinoline films)

REFERENCE COUNT: 25 THERE ARE 25 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L13 ANSWER 26 OF 31 HCAPLUS COPYRIGHT 2005 ACS on STN

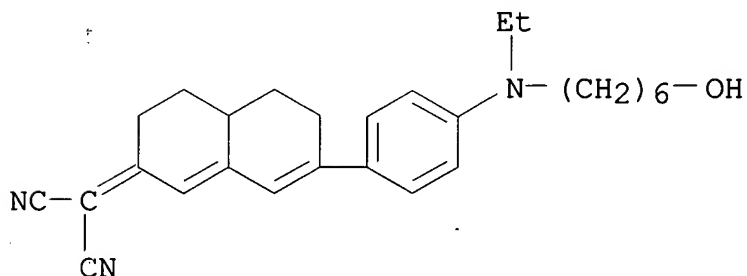
ACCESSION NUMBER: 1998:532407 HCAPLUS

DOCUMENT NUMBER: 129:276433

TITLE: A versatile approach for the synthesis of side-chain aromatic polyquinolines for E-O devices

AUTHOR(S): Ma, Hong; Liu, Sen; Wu, Xiaoming; Wang, Xijun; Jen, Alex K-Y.; Levina, Galina; Staub, Katrin;

Marder, Seth R.  
 CORPORATE SOURCE: Dep. Chem., Northeastern Univ., Boston, MA,  
 02115, USA  
 SOURCE: Polymer Preprints (American Chemical Society,  
 Division of Polymer Chemistry) (1998), 39(2),  
 1109-1110  
 CODEN: ACPPAY; ISSN: 0032-3934  
 PUBLISHER: American Chemical Society, Division of Polymer  
 Chemistry  
 DOCUMENT TYPE: Journal  
 LANGUAGE: English  
 AB Polyquinolines containing p-methoxyphenyl side chains were prepared  
 and hydrolyzed to give p-hydroxyphenyl side chains. The hydroxy  
 groups were reacted with hydroxy-containing chromophores to give  
 polyquinolines having nonlinear optical properties.  
 IT **208345-48-6DP**, reaction products with hydroxyphenyl-containing  
 polyquinolines  
 (preparation of polyquinolines having aromatic side chains and  
 nonlinear optical properties)  
 RN 208345-48-6 HCAPLUS  
 CN Propanedinitrile, [7-[4-[ethyl(6-hydroxyhexyl)amino]phenyl]-  
 4,4a,5,6-tetrahydro-2(3H)-naphthalenylidene]- (9CI) (CA INDEX  
 NAME)



CC 35-5 (Chemistry of Synthetic High Polymers)  
 IT 2872-52-8DP, reaction products with hydroxyphenyl-containing  
 polyquinolines 208345-47-5DP, hydrolyzed, reaction products with  
 hydroxy-containing chromophores **208345-48-6DP**, reaction  
 products with hydroxyphenyl-containing polyquinolines 208345-50-0DP,  
 hydrolyzed, reaction products with hydroxy-containing chromophores  
 208345-51-1DP, hydrolyzed, reaction products with hydroxy-containing  
 chromophores 213739-64-1DP, reaction products with  
 hydroxyphenyl-containing polyquinolines 213739-65-2P



(preparation of polyquinolines having aromatic side chains and nonlinear optical properties)

REFERENCE COUNT: 28 THERE ARE 28 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L13 ANSWER 27 OF 31 HCAPLUS COPYRIGHT 2005 ACS on STN

ACCESSION NUMBER: 1998:338500 HCAPLUS

DOCUMENT NUMBER: 129:41482

TITLE: Versatile Synthetic Approach to Nonlinear Optical Side-Chain Aromatic Polyquinolines with Large Second-Order Nonlinearity and Thermal Stability

AUTHOR(S): Ma, Hong; Wang, Xijun; Wu, Xiaoming; Liu, Sen; Jen, Alex K-Y.

CORPORATE SOURCE: Department of Chemistry, Northeastern University, Boston, MA, 02115, USA

SOURCE: Macromolecules (1998), 31(12), 4049-4052  
CODEN: MAMOBX; ISSN: 0024-9297

PUBLISHER: American Chemical Society

DOCUMENT TYPE: Journal

LANGUAGE: English

AB A versatile synthesis of NLO side-chain aromatic polyquinolines is based on hydrolysis of a methoxy-containing polyquinoline, followed by covalent bonding of a chromophore onto the pendent Ph moieties of the polyquinoline via the Mitsunobu reaction. By locating the hydroxyl group on the pendent Ph side group instead of on the polyquinoline backbone, a higher efficiency of chromophore attachment is achieved. A Ph spacer between the polymer backbone and the NLO chromophore facilitates high elec. field poling of the NLO polyquinoline, compared to polyquinolines with chromophores directly attached on the polymer backbone.

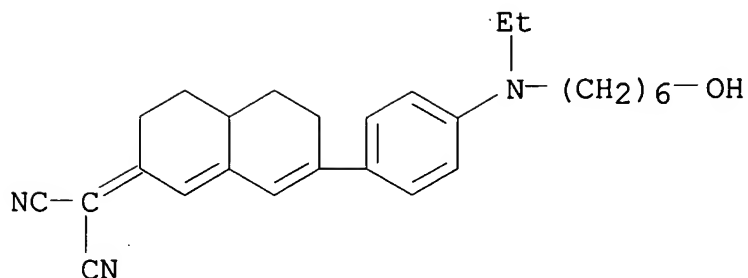
IT **208345-48-6DP**, reaction products with hydroxyl-polyquinolines

(preparation of nonlinear optical side-chain aromatic polyquinolines

with large second-order nonlinearity and thermal stability)

RN 208345-48-6 HCAPLUS

CN Propanedinitrile, [7-[4-[ethyl(6-hydroxyhexyl)amino]phenyl]-4,4a,5,6-tetrahydro-2(3H)-naphthalenylidene]- (9CI) (CA INDEX NAME)



CC 35-8 (Chemistry of Synthetic High Polymers)

Section cross-reference(s): 36, 73

IT 2872-52-8DP, reaction products with hydroxyl-polyquinolines  
 190715-21-0DP, reaction products with hydroxyl-polyquinolines  
 208345-47-5DP, demethoxylated, Mitsunobu reaction products with  
 chromophores **208345-48-6DP**, reaction products with  
 hydroxyl-polyquinolines 208345-49-7DP, reaction products with  
 hydroxyl-polyquinolines 208345-50-0DP, demethoxylated, Mitsunobu  
 reaction products with chromophores 208345-51-1DP,  
 demethoxylated, Mitsunobu reaction products with chromophores  
 (preparation of nonlinear optical side-chain aromatic  
 polyquinolines

with large second-order nonlinearity and thermal stability)

REFERENCE COUNT: 27 THERE ARE 27 CITED REFERENCES AVAILABLE  
 FOR THIS RECORD. ALL CITATIONS AVAILABLE  
 IN THE RE FORMAT

L13 ANSWER 28 OF 31 HCAPLUS COPYRIGHT 2005 ACS on STN

ACCESSION NUMBER: 1992:436593 HCAPLUS

DOCUMENT NUMBER: 117:36593

TITLE: Cycloheptadienyl bisazo pigment-containing  
 electrophotoconductor, electrophotographic  
 device, and facsimile using same

INVENTOR(S): Go, Nobuaki; Kikuchi, Norihiro; Maruyama, Akio

PATENT ASSIGNEE(S): Canon K. K., Japan

SOURCE: Jpn. Kokai Tokkyo Koho, 12 pp.

CODEN: JKXXAF

DOCUMENT TYPE: Patent

LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
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USHA SHRESTHA REM 4B28

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JP 04027955

A2

19920130

JP 1990-132673

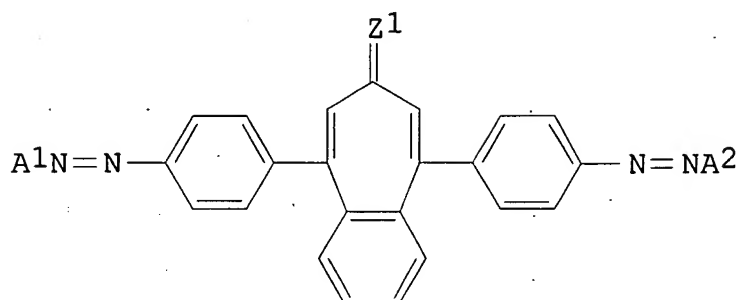
1990  
0524

PRIORITY APPLN. INFO.:

JP 1990-132673

1990  
0524OTHER SOURCE(S):  
GI

MARPAT 117:36593



I

AB Claime are (1) an electrophotog. photoconductor having a photosensitive layer containing a bisazo pigment I ( $Z1 = O, S$ , dicyanomethylene;  $A1-2 =$  coupler residue containing phenolic OH) on an elec. conductive support, (2) an electrophotog. device using the photoconductor, and (3) a facsimile having the device and a receptor for image from remote terminal. The photoconductor, e.g., a combination of I ( $Z1 = O$ ,  $A1-2 =$  Naphthol AS residue) and a styryl hydrazone charge-transfer agent, is useful for repeating use.

IT 142200-05-3 142232-83-5 142232-88-0

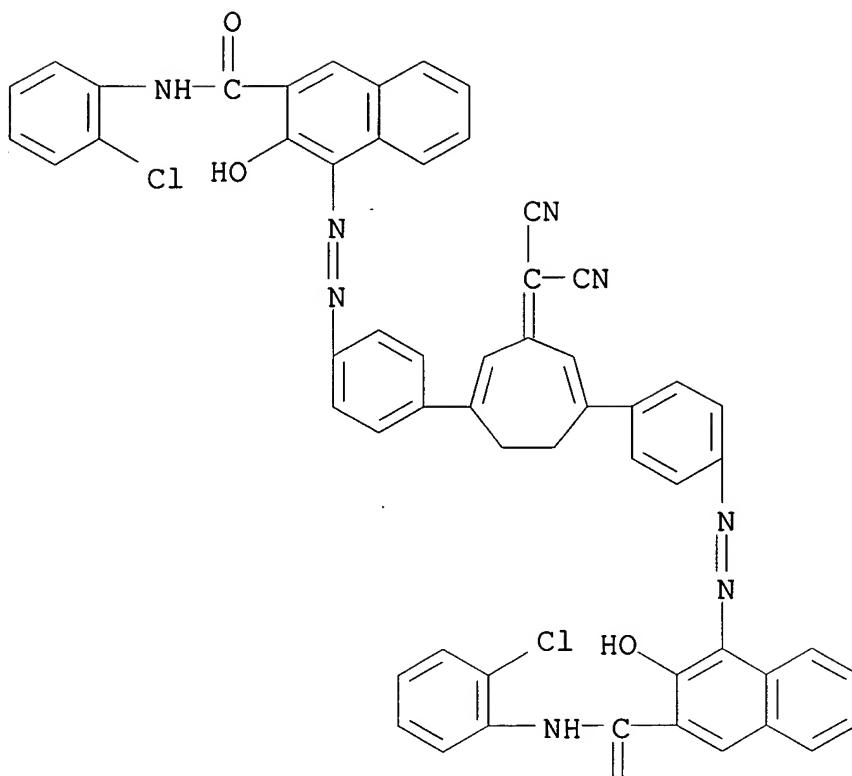
142245-05-4

(Preparation of, charge-generating agent, for electrophotog. photoconductor, for facsimile)

RN 142200-05-3 HCAPLUS

CN 2-Naphthalenecarboxamide, 4,4'-[[6-(dicyanomethylene)-4,7-cycloheptadiene-1,4-diyl]bis(4,1-phenyleneazo)]bis[N-(2-chlorophenyl)-3-hydroxy- (9CI) (CA INDEX NAME)

PAGE 1-A

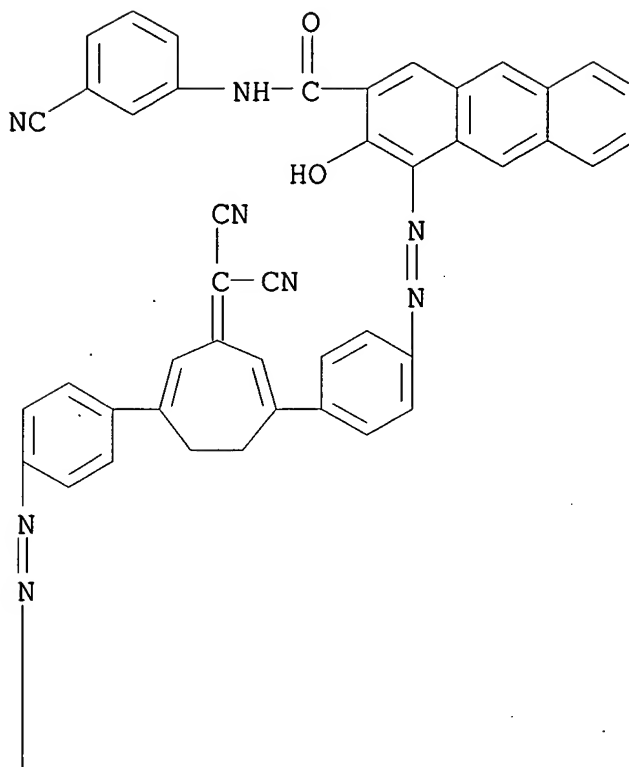


PAGE 2-A

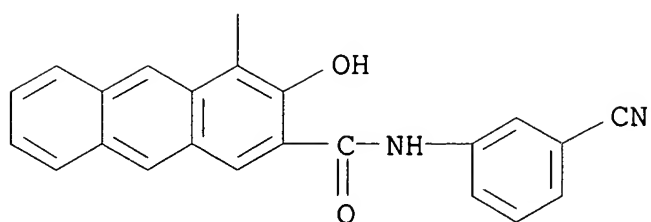


RN 142232-83-5 HCAPLUS  
 CN 2-Anthracenecarboxamide, 4,4'-[[6-(dicyanomethylene)-4,7-cycloheptadiene-1,4-diyl]bis(4,1-phenyleneazo)]bis[N-(3-cyanophenyl)-3-hydroxy- (9CI) (CA INDEX NAME)

PAGE 1-A

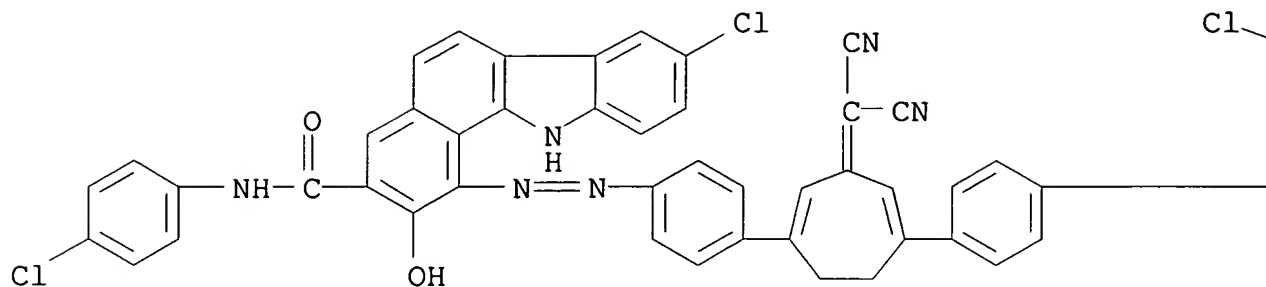


PAGE 2-A

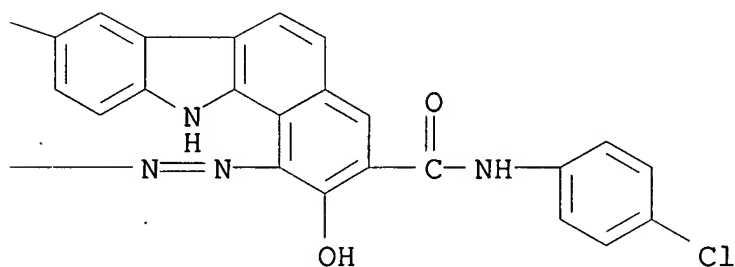


RN 142232-88-0 HCAPLUS  
 CN 11H-Benzo[a]carbazole-3-carboxamide, 1,1'-[[6-(dicyanomethylene)-4,7-cycloheptadiene-1,4-diyl]bis(4,1-phenyleneazo)]bis[8-chloro-N-(4-chlorophenyl)-2-hydroxy- (9CI) (CA INDEX NAME)

PAGE 1-A



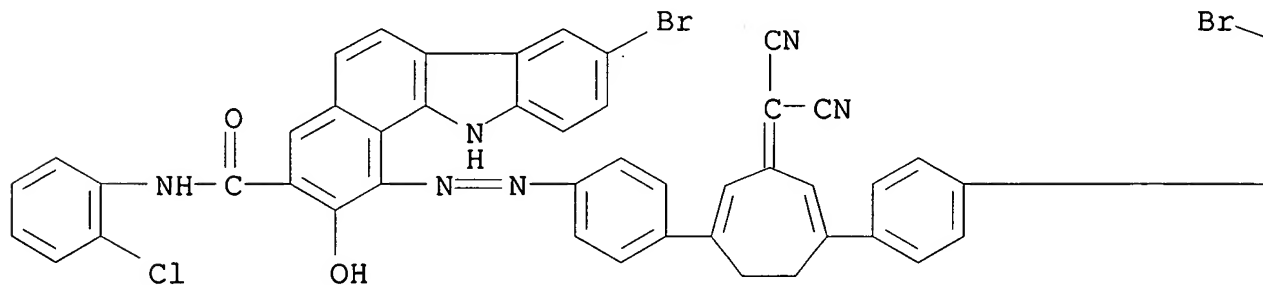
PAGE 1-B



RN 142245-05-4 HCAPLUS

CN 11H-Benzo[a]carbazole-3-carboxamide, 1,1'-[[6-(dicyanomethylene)-4,7-cycloheptadiene-1,4-diyl]bis(4,1-phenyleneazo)]bis[8-bromo-N-(2-chlorophenyl)-2-hydroxy- (9CI) (CA INDEX NAME)

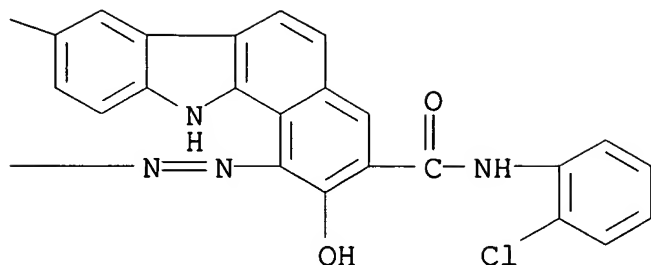
PAGE 1-A



USHA SHRESTHA

REM 4B28

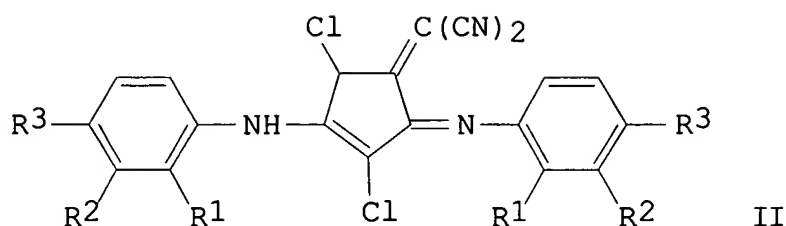
PAGE 1-B



IC ICM G03G005-06  
ICS G03G005-06; H04N001-29  
CC 74-3 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)  
IT 142199-99-3 142200-00-8 142200-01-9 142200-02-0  
142200-03-1 142200-04-2 **142200-05-3** 142200-06-4  
142200-07-5 142200-08-6 142200-09-7 142200-10-0  
142200-11-1 142213-46-5 142213-47-6 142216-33-9  
142216-34-0 142216-35-1 142216-36-2 142216-37-3  
142216-38-4 142216-39-5 142216-40-8 142216-41-9  
142216-42-0 142216-43-1 142216-44-2 142216-45-3  
142216-46-4 142216-47-5 **142232-83-5** 142232-84-6  
142232-85-7 142232-86-8 142232-87-9 **142232-88-0**  
**142245-05-4** 142245-06-5 142245-07-6

(Preparation of, charge-generating agent, for electrophotog.  
photoconductor, for facsimile)

L13 ANSWER 29 OF 31 HCAPLUS COPYRIGHT 2005 ACS on STN  
ACCESSION NUMBER: 1988:152135 HCAPLUS  
DOCUMENT NUMBER: 108:152135  
TITLE: Syntheses with nitrile. LXXVI.  
Aminopentafulvene-6,6-dicarbonitrile dyes with  
near-infrared absorption  
AUTHOR(S): Junek, Hans; Uray, Georg; Zuschnig, Gerhard  
CORPORATE SOURCE: Inst. Org. Chem., Karl-Franzens Univ. Graz,  
Graz, A-8010, Austria  
SOURCE: Dyes and Pigments (1988), 9(2), 137-52  
CODEN: DYPIDX; ISSN: 0143-7208  
DOCUMENT TYPE: Journal  
LANGUAGE: German  
OTHER SOURCE(S): CASREACT 108:152135  
GI



AB 1,2,3,4-Tetrachloro-6,6-dicyanofulvene (I) reacted readily with substituted primary anilines, except 2,6-dialkylanilines, to give yellow to orange 2,5-dichloro-4-dicyanomethylene-1-phenylimino-3-phenylamino-1-cyclopentenes (II; R1 = H, Me, OMe, iso-Pr; R2 = H, Cl; R3 = H, Me, OMe, Cl, Br). Reaction of secondary anilines with I afforded deeply colored 3-[N-phenyl-N-methyl(or cyanoethyl)amino]-1,2,4-trichloropentafulvene-6,6-dicarbonitriles having  $\lambda_{\max} = 610-650$  nm. N,N-Dialkylanilines and sterically hindered primary anilines reacted with I at the p-position yielding polymethines having  $\lambda_{\max} \leq 780$  nm.

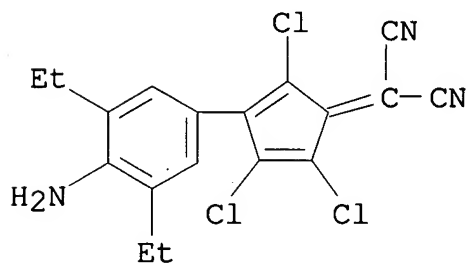
IT **113734-45-5P 113734-46-6P 113734-47-7P**

**113734-48-8P 113734-49-9P**

(preparation and absorption spectra of)

RN 113734-45-5 HCAPLUS

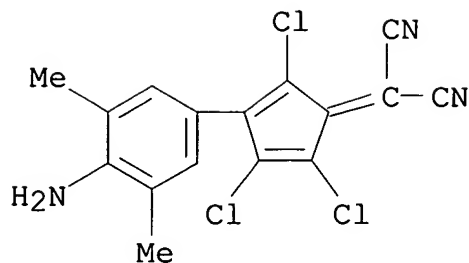
CN Propanedinitrile, [3-(4-amino-3,5-diethylphenyl)-2,4,5-trichloro-2,4-cyclopentadien-1-ylidene]- (9CI) (CA INDEX NAME)



RN 113734-46-6 HCAPLUS

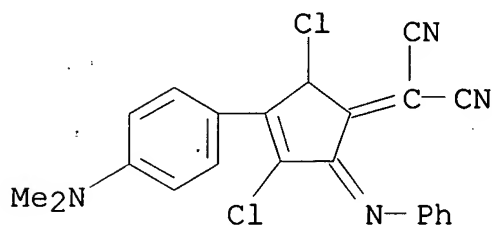
CN Propanedinitrile, [3-(4-amino-3,5-dimethylphenyl)-2,4,5-trichloro-2,4-cyclopentadien-1-ylidene]- (9CI) (CA INDEX NAME)





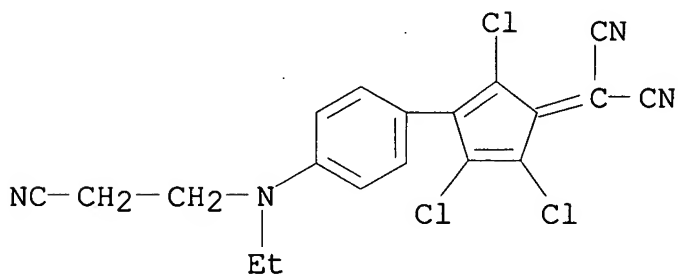
RN 113734-47-7 HCAPLUS

CN Propanedinitrile, [2,4-dichloro-3-[4-(dimethylamino)phenyl]-5-(phenylimino)-3-cyclopenten-1-ylidene]- (9CI) (CA INDEX NAME)



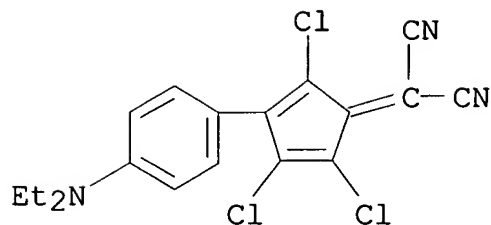
RN 113734-48-8 HCAPLUS

CN Propanedinitrile, [2,3,5-trichloro-4-[4-[(2-cyanoethyl)ethylamino]phenyl]-2,4-cyclopentadien-1-ylidene]- (9CI) (CA INDEX NAME)



RN 113734-49-9 HCAPLUS

CN Propanedinitrile, [2,3,5-trichloro-4-[4-(diethylamino)phenyl]-2,4-cyclopentadien-1-ylidene]- (9CI) (CA INDEX NAME)

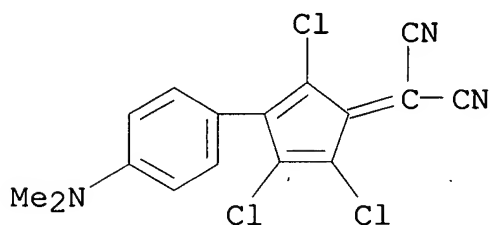


IT **113734-43-3P**

(preparation and condensation with aniline)

RN 113734-43-3 HCAPLUS

CN Propanedinitrile, [2,3,5-trichloro-4-[4-(dimethylamino)phenyl]-2,4-cyclopentadien-1-ylidene]- (9CI) (CA INDEX NAME)



CC 41-11 (Dyes, Organic Pigments, Fluorescent Brighteners, and Photographic Sensitizers)

IT **113734-45-5P 113734-46-6P 113734-47-7P**

**113734-48-8P 113734-49-9P 113734-50-2P**

113734-51-3P 113734-52-4P 113734-53-5P 113734-54-6P

113734-55-7P 113734-56-8P 113734-57-9P 113734-58-0P

113734-59-1P 113734-60-4P 113734-61-5P 113734-62-6P

113734-63-7P 113734-64-8P 113734-65-9P

(preparation and absorption spectra of)

IT **113734-43-3P 113734-44-4P**

(preparation and condensation with aniline)

L13 ANSWER 30 OF 31 HCAPLUS COPYRIGHT 2005 ACS on STN

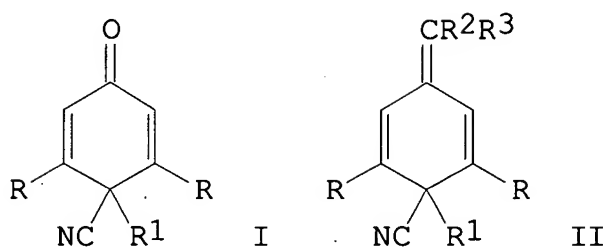
ACCESSION NUMBER: 1987:101770 HCAPLUS

DOCUMENT NUMBER: 106:101770

TITLE: 1,4-Pentadien-3-ones. XXVI. Syntheses of s-trans/s-trans fixed 1,4-pentadien-3-ones and their reactions with active methylene compounds

AUTHOR(S): Kuehn, Reimund; Otto, Hans Hartwig

CORPORATE SOURCE: Pharm. Inst., Univ. Freiburg, Freiburg,  
D-7800, Fed. Rep. Ger.  
SOURCE: Archiv der Pharmazie (Weinheim, Germany)  
(1986), 319(10), 898-910  
CODEN: ARPMAS; ISSN: 0365-6233  
DOCUMENT TYPE: Journal  
LANGUAGE: German  
OTHER SOURCE(S): CASREACT 106:101770  
GI

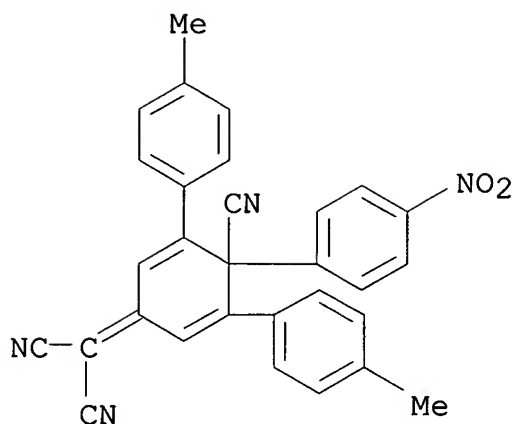


AB Cyclohexadienones I (R, R1 = Ph or substituted phenyl) (title compds.) were prepared from the corresponding cyclohexanones by bromination-dehydrobromination. 4,4-Dimethyl-2-cyclohexen-1-one and 4-cyano-4-phenylcyclohexanone react somewhat differently. I underwent condensation reactions with malonic acid derivs. to afford cross-conjugated systems II (R2 = CN, R3 = CN, CO2Me, CONH2; R2 = R3 = CO2Me).

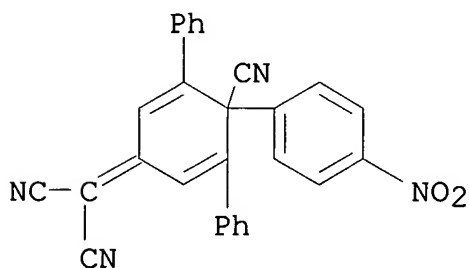
IT **106920-61-0P 106920-62-1P**  
(preparation and spectra of)

RN 106920-61-0 HCAPLUS

CN Propanedinitrile, [4-cyano-3,5-bis(4-methylphenyl)-4-(4-nitrophenyl)-2,5-cyclohexadien-1-ylidene]- (9CI) (CA INDEX NAME)



RN 106920-62-1 HCAPLUS  
 CN Propanedinitrile, [4-cyano-4-(4-nitrophenyl)-3,5-diphenyl-2,5-cyclohexadien-1-ylidene]- (9CI) (CA INDEX NAME)



CC 24-5 (Alicyclic Compounds)  
 IT 84227-89-4P 84227-90-7P 84227-91-8P 84227-92-9P  
 84227-93-0P **106920-61-0P 106920-62-1P**  
 106920-63-2P 106920-64-3P 106920-65-4P 106920-66-5P  
 106920-67-6P 106932-86-9P  
 (preparation and spectra of)

L13 ANSWER 31 OF 31 HCAPLUS COPYRIGHT 2005 ACS on STN  
 ACCESSION NUMBER: 1971:76204 HCAPLUS  
 DOCUMENT NUMBER: 74:76204  
 TITLE: Reactions of some 1,3-indandione derivatives  
 AUTHOR(S): Irick, Gether, Jr.  
 CORPORATE SOURCE: Res. Lab., Tennessee Eastman Co., Kingsport,  
 TN, USA  
 SOURCE: Journal of Chemical and Engineering Data

(1971), 16(1), 118-21  
CODEN: JCEAAX; ISSN: 0021-9568

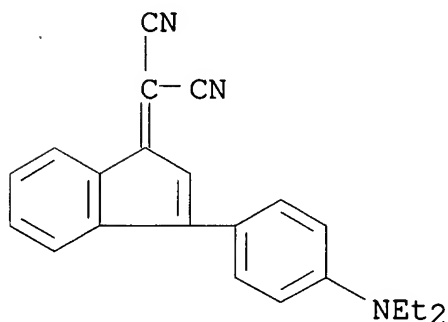
DOCUMENT TYPE: Journal  
LANGUAGE: English

AB Derivs. of 1,3-indandione having a carbonyl O replaced by a strong electron-withdrawing group (1,3-dioxo-2-indanylidene or dicyanomethylene) were converted to chlorobenzofulvenes by reaction with  $\text{POCl}_3$ . The halogens of these chlorobenzofulvenes were displaced by various nucleophiles to produce colored products. Red to blue methine dyes were obtained by condensation of the methylene groups in the derivs. of 1,3-indandione with aromatic aldehydes. Visible spectra of the colored products showed that the 1,3-dioxo-2-indanylidene group was a better electron acceptor than dicyanomethylene group.

IT **30508-04-4P 31201-24-8P**  
(preparation of)

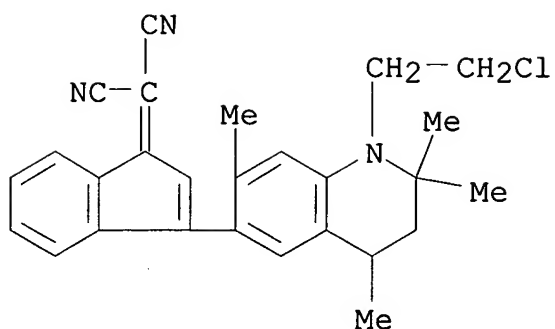
RN 30508-04-4 HCAPLUS

CN Indene- $\Delta 1, \alpha$ -malononitrile, 3-[p-(diethylamino)phenyl]-  
(8CI) (CA INDEX NAME)



RN 31201-24-8 HCAPLUS

CN Indene- $\Delta 1, \alpha$ -malononitrile, 3-[1-(2-chloroethyl)-  
1,2,3,4-tetrahydro-2,2,4,7-tetramethyl-6-quinolyl]- (8CI) (CA  
INDEX NAME)



CC 26 (Condensed Aromatic Compounds)  
 IT 805-54-9P 1080-74-6P 1707-95-5P 2826-28-0P 21889-13-4P  
 30507-89-2P 30507-90-5P 30507-91-6P 30507-92-7P  
 30507-93-8P 30507-94-9P 30507-95-0P 30507-96-1P  
 30507-97-2P 30507-99-4P **30508-04-4P** 30513-53-2P  
 30513-54-3P 30513-55-4P 30513-56-5P 30513-57-6P  
 30513-58-7P 30653-79-3P 30653-80-6P 31201-23-7P  
**31201-24-8P**  
 (preparation of)